INDIA RUBBER WORLD AND ELECTRICAL TRADES REVIEW

Published on the 10th of each Month by

THE INDIA RUBBER PUBLISHING CO.

TIMES BUILDING, NEW YORK, U. S. A.

JNO. R. DUNLAP. H. C. PEARSON.

Vol. 13. NOVEMBER 10, 1895. No. 2.

SUBSCRIPTIONS: $3.00 per year, $1.75 for six months, postpaid, for the United States and Canada. Foreign countries, same price. Special Rates for Clubs of five, ten or more subscribers.

ADVERTISING: Rates will be made known on application.

REMITTANCES: Should always be made by bank draft, Post Office Orders or Express Money orders on New York, payable to THE INDIA RUBBER PUBLISHING COMPANY. Remittances for foreign subscriptions should be sent by International Post order, payable as above.

DISCONTINUANCES.—Yearly orders for subscriptions and advertising are regarded as permanent, and after the first twelve months they will be discontinued only at the request of the subscriber or advertiser. Bills are rendered promptly at the beginning of each period, and thereby our patrons have due notice of continuance.

Entered at New York Post Office as mail matter of the second-class.

## TABLE OF CONTENTS.



## APROPOS OF THE ATLANTA FAIR.

THE rubber trade appears to be practically unrepresented at the big exhibition now open in Atlanta. One reason, without doubt, is due to the wide extent of this country, preventing one half from knowing what the other half is doing, and its happening that all the great rubber-manufacturers are located in a different geographical division from that which is contributing to the success of the Atlanta exhibition. This enterprise, while a most creditable one, cannot be compared in scope with the late World's Columbian Exposition, and that, as everybody knows, failed to make the impression in the Atlantic seaboard states which might have been expected in view of the boasted oneness of our great nation. But another consideration, so far as Atlanta is concerned, is the conclusion on the part of rubber-manufacturers that the South, as a field for their trade, does not repay cultivation to the same extent as the northern states. Its warmer climate, and especially its milder winters, make slighter demands upon the rubber-shoe and waterproof-clothing trades, while the less-advanced conditions of manufacturing call for fewer mechanical goods than are required in some other parts of the country. Hence it seems unnecessary—to many rubber-men, at least—to put forth any special effort to secure southern customers.

While not presuming to judge of the best policy for the trade to pursue, we cannot doubt that the South has recently made much greater advancement than is generally appreciated at a distance, or that a larger representation of manufactures at Atlanta would have been mutually beneficial to exhibitors and sightseers. It is possible that a limited purchasing power on the part of the people in that section hitherto has had some of the effect on trade which has been attributed to climatic conditions. At any rate, a great gathering of the best people from many states affords an opportunity for the extending of trade connections which ought not to be lightly passed over.

And yet it possibly is better that the trade should not be represented at Atlanta in the same way as at Chicago, creditable as were some of the rubber exhibits there. This would mean a great duplication of work by different firms, at heavy expense, tending to the confusion of visitors to the fair, and rendering the educational effect less marked. What is needed at a great fair is not always that the individual members of a trade should make an impress upon the public mind, but that the public shall be given the best possible idea of the nature and uses of a particular class of goods. At Chicago, for instance, there were collective exhibits of some French and German trades, the primary object of which was to give an idea of the general excellence of their products. But whoever tried there to study an American industry—say of rubber—had to wander from building to building, seeing nothing complete and never knowing when he had seen everything in the class. The individual competition is well enough between rival stores in a single city, but the lesson of the rubber exhibits at Chicago should have been to teach the whole world—if this were the fact—that American products in this line

were superior to all others. A collective exhibit of rubber goods might have been made at Atlanta without loss of dignity to any individual firm in the trade—after which, the public having been taught a new lesson in regard to rubber, the market would belong to whoever showed most enterprise in cultivating it.

By the way, the Paris exhibition of 1900 is likely to afford the first great opportunity for our manufacturers to make that impression upon the outside world which they all hope for, and the example of some of the foreigners at the Chicago fair in the way of collective exhibits should not be lost upon them. If our rubber men will only join forces for that occasion, and begin now, they can simply distance all competition, but if individual exhibits should be made, the highest standard set for the industry in America will be that separate display which happens to attract the most attention.

## OUR UNSATISFACTORY PATENT SYSTEM.

IT is time to ask whether the patent business in the United States has not been overdone; there is no longer any question but that it has been badly done. By this it is not intended to refer merely to such bungling as that by which the effort to admit foreign inventors to the privileges of our patent office resulted in putting at a disadvantage at home those American inventors who had succeeded in securing patents abroad. But there has been a general failure on the part of the government to observe the spirit of that clause of the constitution which grants to congress the power—

to promote the progress of science and useful arts, by securing, for limited times, to authors and inventors the exclusive right to their respective writings and discoveries.

As Story puts it, "it is indeed a poor reward to secure to authors and inventors, for a limited period only, an exclusive title to that which is, in the noblest sense, their own property; and to require it ever afterwards to be dedicated to the public." The same great commentator proceeds to show why, if inventors are to have any real property in their discoveries, the power of protection must be given to and *administered by* the general government.

But this theory bears slight relation to the practice under our government, where patents are granted with little discrimination as to the novelty or value of the alleged inventions, and where patentees are left to defend or protect their rights at their own expense. The inventor who brings suit for the infringement of his patent, in case he should happen to win, obtains a decree from the court for an accounting of the profits made by the defendant in the manufacture of the patented article. But the defendant's own statement of profits must be accepted, and the plaintiff may collect his money if he can. The government has nothing to do with the case. How is this "securing" to inventors "the exclusive right" to their discoveries? Or let us suppose that a man without means should make an important discovery and get it patented, but that, before he could arrange for putting it on the market, unscrupulous parties should seize the invention and begin to profit by it. The inventor would be helpless, on account of his poverty, to protect his rights to what Story says is "in the noblest sense" his own property. His patent would be simply without value—the government's protection only a farce.

Any one who may consider this indictment of the American patent system too sweeping should read a letter written by George Westinghouse, Jr.,—the head of a great electrical industry founded originally upon patents,—to Professor George Forbes, of London, declining to give some details of a new invention for use in a paper before some learned society, although the proper steps had been taken to protect the invention by patents. Mr. Westinghouse wrote:

You must have become aware that *patent rights are no longer respected in this country;* that whatever is brought out and fully explained is immediately availed of by unscrupulous competitors; and we now feel it is a matter of great importance to maintain for the present, and until we are well established [in the use of this invention], what are properly trade secrets.

That this business is badly done is indicated by the government's failure, during a whole century, to find means to make its patent grants respected. The possibilities in this direction are shown in Germany, where the government goes so far in the interest of a patentee that suits for infringement are brought by the state prosecutor. It likewise has been badly done in the granting of a deluge of letters-patent, with so little care that the intending purchaser of a patent nowadays must be cautious lest he find himself the owner of a "gold brick." Either he may find that previously-issued American patents covered the same ground, or that a similar invention was patented in another country at an earlier date, or that the state of the art as widely practiced long ago disclosed the invention. Or, if the matter be taken to the courts, it may be decided that the alleged invention is unpatentable, on general principles. Here, again, foreign States have something to teach us. Not more than 15 per cent. of the applications for patents in Germany are successful, but patent rights are worth all the more because of the exercise of care in granting them. In Russia so complete a record is kept of the patents granted throughout the world that the authorities are able, before granting a new patent, to decide whether or not the same principle has been patented in another country.

The art of invention is still so little understood by some men that it would not be surprising if one of them, finding the water-pipe leading to his factory too small, and replacing it with another of larger size, should feel that he had evolved a new principle in hydraulics and hasten to consult a patent solicitor. Nor would it be inconsistent with the policy of the patent office were it to allow not only his claim respecting the enlarged water-pipe, but fourteen other claims, for pipes of varying and still larger dimensions, to provide for the unlimited development of the business in question. It is not strange that, with such a go-as-you-please patent system, Americans should have gained such a reputation as inventors, or that the specifications of patents in any class have become so numerous that only the owner of a mansion can find houseroom for those relating merely to his own business.

# USES AND ABUSES OF FIRE AND MILL HOSE.

*By W. H. Adams.*

ACCORDING to service, fire hose may be divided into two distinctly different classes—viz., that in use by municipal fire departments and that used in and about manufacturing plants, hotels and public buildings. This latter is generally classed as "Mill Hose."

Throughout the United States at the present time the largest proportion of fire department hose is rubber lined cotton. In some sections of the Middle and Western States, and very generally in the South, rubber hose is prominent. In New England there are only two or three departments which use a partial equipment of rubber. Very generally departments using cotton hose under steamer pressure employ a double jacket hose, *i. e.*, a hose having the inner fabric (which is rubber lined) drawn into an outer detached fabric. This drawing in puts an even tension on both fabrics. The ends are then trimmed, and in 50-foot lengths the hose is coupled. To do this many manufacturers adhere to the primitive method by them employed ever since the introduction of the expanding tool for expanding the brass rings inside the hose, thereby setting the hose firmly into corrugations cast in the "tails" or ends of the couplings for that purpose. More progressive producers circumvent this slow and laborious hand method by applying steam power to the expanding tools.

Almost universally in the United States and Canada the net internal diameter of leading hose employed in fire departments is 2½". However, in part because of increased pumping capacities, in some localities there has been a tendency of late to use 3", and even 3½". Large fire boats with heavy pumping capacities generally carry 3" or 3½" hose, which is usually rubber-lined cotton. However, there are some fire departments whose boat quarters do not admit of facilities for drying cotton hose, in which cases 2½" rubber hose is customarily used.

Fire hose is almost invariably sold with couplings attached. In shipping to distant points the producer is frequently troubled about the correct thread for his couplings, because of the fact that fire hydrants have so many different measurements of threads or outlet nozzles, in compliance with which hose couplings, and intakes and outlets of engines, must be adjusted. To overcome this irregularity, and to have the advantage of any one fire department being able to render assistance to any other department in time of need, the International Association of Fire Engineers has, at different annual conventions, canvassed the subject very thoroughly, and endeavored to have an universal thread established; but valuable as it would be to all interested, that has never yet been, and may never be, accomplished, as it would necessitate tremendous cost to alter threads on steam engines, water towers, hose and hydrants, saying nothing of temporarily throwing some of all these equipments out of service in places where such could ill be spared. Therefore, unless the hose seller has a record of the exact thread needed, he must needs procure a "sizer" (a coupling, or in some instances a hydrant cap, is used by the buying department) from which to get the correct thread for his couplings.

It is but a few years since rubber lined, double jacket 2½" hose, with couplings attached, was sold for one dollar per foot, guaranteed to stand, upon delivery, a test pressure of 300 lbs., and warranted as to quality and manufacture for three years; but through improved facilities for producing, a much superior hose is now offered with a guarantee of 400 to 500 lbs., and warranted four to five years, at much less. Since the days of abandoning the generally rigid and very dirty leather hose, vast improvements have been made in rubber hose as well as cotton. The first seamless cotton hose made was knitted. Following this in a short time woven hose was introduced. Because of the recent great improvements in knitting looms the latest improved hose in double jacket 2½" will not elongate to exceed 13" or 14", lies out perfectly straight, and makes less than one revolution when under 400 lbs. pressure.

It is not long ago that those who bought rubber fire hose had the impression that weight was a good quality—almost essential—in that commodity. With couplings attached, 2½" 4 ply rubber hose in former days weighed 70 lbs. and over per 50 feet.

In the United States there are about seven manufacturers of high grade rubber fire hose. Competition between these brought about the introduction of a special light weight, very closely woven, high grade duck which possesses great strength. Their rubber compounds have been reduced in weight, so that now there are two or three of this number manufacturing this commodity, the weight of which with couplings is as low as 55 lbs. per 50 feet. This hose is also guaranteed to stand 400 lbs. pressure. Statements have been made by some manufacturers that they can produce a 400-lb. rubber hose to weigh less than 50 lbs. with couplings, but unless the duck be made up of Sea Island cotton (a commodity far beyond the reach of fire hose at ruling prices) those practical in its use doubt such hose having the ability to perform satisfactory fire service.

What is known as mill hose is composed of about two weights of rubber-lined single-jacket cotton hose and linen hose. This is, in the large majority of cases, 2½", the other occasional size being 2". The cotton for this is both woven and knitted—perhaps about evenly divided in quantity. To have it ready for quick service this hose is carried in mill yards on hose carts. In buildings it is folded in swing wall racks and wound on wall reels. In the cases of the latter two methods the hose should be strong, pliable and light. Perhaps a large amount of such cotton hose sold for this trade would burst at much less than 300 lbs. pressure, though there are some insurance regulations which require accepted hose to stand 400 lbs. Startling facts are at hand showing that many buyers of

mill hose merely buy it and "keep it handy" in compliance with their insurance requirements; and that they feel that they do not require it because their plant has stood for years without ever being visited by fire. Also because certain dealers quote very low prices to sell other goods and thus create a demand for a hose of a light fabric and a very low grade of so-called rubber lining, all of which hurts the traffic in high grade mill hose. The standard of linen hose is much more rigidly upheld, as in the United States a very small portion of this hose is lined. When linen hose is bought upon competitive *merits* the oozing (or in trade parlance sweating) in the first few minutes is measured and carefully compared, then it is frequently tested up to its bursting pressure. According to its ability to hold heavy pressure and its minimum leakage the value is based. The best linen hose takes up after being under pressure for a few minutes, so that thereafter there is merely a moisture on the surface.

Regarding the chief causes of rapid deterioration of fire hose much might be said in condemnation, though there are many in fire department service which are unavoidable.

First to cite cotton hose in fire departments its principal enemy is rot. Next are the various causes of damage when doing service in fire duty, such as dragging it over roof combings and points—over scrap heaps containing cutting points—over frozen ground and sharp points of ice. The occasional happening of burning embers lighting on it. The closing of a shut-off nozzle at the end of a line while an engine is pumping and not provided with a relief valve. The very heavy strain when under heavy water pressure a line of 50′ or more of hose is frequently suspended in mid air from a roof or window, with nothing for the hose to rest upon between that bearing surface and the ground. Instances where it is not properly guarded against when horses, vehicles and apparatus are driven over it without a skid protection. The occasional happening in cold climates when water in the hose is allowed to freeze solid, and the hose becomes buried under frozen slush and afterward when it is partly dug and dragged out, then *bent* until the ice cracks so as to admit of its being partly folded to take away on a sled. Occasions where hose is hung in a tower, to dry and habitually hoisted by one end, the lower end frequently hanging in the damper air of the basement of a short tower, and perhaps never becomes thoroughly dry, therefore such ends rot.

Striving to obviate some of these liabilities and make their products more valuable a few manufacturers recently have been picking their fabrics more closely and smoothly, making them less susceptible to chafing and greatly adding to strength.

Rubber hose is more susceptible to damage when exposed to intense heat and when dragged over rough surfaces than is cotton. When the surface of rubber hose becomes torn or cut water enters to the duck which never after becomes dry as long as it is hose from the fact that it is sealed from contact with air, hence the duck rots. Some manufacturers of rubber hose make claim to overcome this rot in duck of rubber hose through "treating" the fabric before it is frictioned. Rubber hose has two advantages, so long as the surface remains intact. While it is advisable to wash it it is never necessary to dry it, therefore it is always ready for service and departments using it only have to provide one quantity per company, but it costs nearly twice as much as cotton hose.

To add to the longevity of cotton hose it should be washed after every service, and then thoroughly dried. To wash it two or three different methods are used. One old way is to have a sluice about 5 ft. long × 6 or 8 inches square. In the center of one side of this a female coupling is set.

When desired to wash hose this is connected with a hydrant in the yards, or in the street in front of the house. One end of the hose is passed into the sluice and the hydrant opened to a good flow, and so the hose is hauled through the sluice and washed. Perhaps the more general way of washing is the less effective—*i. e.*, by washing it in a 50 foot trough in the engine house basement, the floor of which is either cement or asphalt—and on which (when it is done at all) the hose is scrubbed with long handled cocoa scrubs. Following this the hose is hoisted up in the hose tower, with which nearly every engine house is provided. This tower is of sufficient height to admit of hose in 50′ lengths being hoisted so that the lower end will clear the basement floor. In fact the modern tower admits of a hoist by which the bottom end of the hose hangs 2 or 3 feet above the street floor where it gets better air and dries more thoroughly. From cross timbers at the top of the tower are suspended hose tower pulleys with manila rope rove through them. At the hoisted ends of these ropes are attached hooks which clutch the horns of the couplings, and so the hose is hung at full length permitting the water to drain from it, and where with proper ventilation it hangs until it is supposed to be dry. Each company using cotton hose is supposed to have twice the quantity carried on the wagon, so that as nearly as possible they may have one lot dry. If the wagon have a load of dry hose when that last dried comes out of the tower the latter is rolled and piled ready to be connected and stowed in the wagon upon the return of the auxiliary lot from a fire, wet.

To dry fire hose the chief engineer of a well equipped Eastern fire department a short time ago introduced a method which obviates the greater expense of a hose tower and has the advantage of a better drying atmosphere. It is a series of racks, with slatted bottoms, in a tier, built in the shape of an ox-bow with the bow elevated and the ends depressed. This affords perfect drainage, offers plenty of good air and the hose is easily put in and taken out. We understand it has proved such a success there that other departments have adopted it with marked satisfaction.

There are several instances on record where fire departments are conducted on such penurious measures as to have only one stock of cotton hose per company. In such cases the hose is rarely washed and but infrequently dried, and often stowed wet. Needless to remark such hose rots out very quickly.

The causes of depreciation of mill hose are chiefly these.

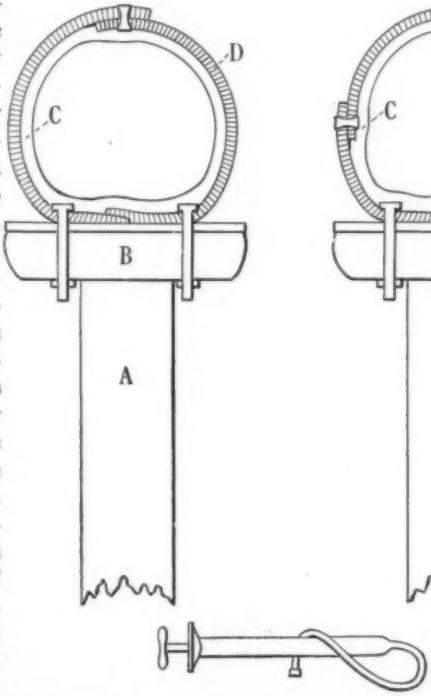
Should it be linen and kept in a damp place, or should water be spilled upon it, or if after service it be not thoroughly dried it will mildew very quickly. Dampness is the chief cause of damage to linen hose.

In the case of rubber lined cotton hose mildew is considerable, where the hose lies in a fixed fold for a long time without being used, or should it be kept in a high temperature or a very cold one low grade linings rapidly depreciate by the frictioning being impaired in heat while they crack in cold if folded or reeled tightly. Even if lined with a high grade compound both linings and fabrics become creased if tightly stowed (and they invariably are) and in time rigid, hence awkward to handle and probably unreliable when required for service. Therefore all cotton mill hose should be taken down at least three times a year, connected with the water outlet and 50 or 60 lbs. pressure of water run through it, then thoroughly dried and restowed on new folds. All hose, whether linen or cotton, should be carefully examined frequently to avoid mildew—even where dampness is not suspected. In stowing rubber lined hose the stowage pressure put upon it should not exceed the minimum of that necessary to hold it securely. Frequently lined hose is injured by stowing say 300 ft. in a space designed for 200.

## THE EARLIEST PNEUMATIC TIRES.

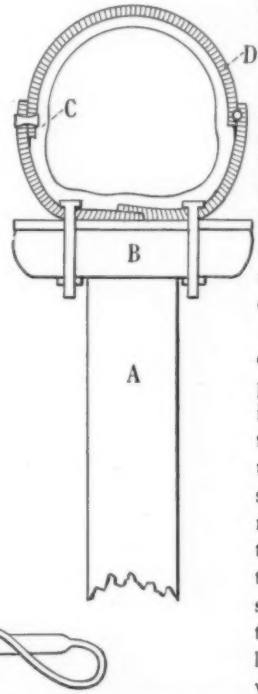
*By Hawthorne Hill.*

ONE can readily believe that the attention of visitors to the fashionable parks in London, at a certain period just a half-century ago, was "much attracted" by the appearance among the gay equipages of a certain brougham, after reading the contemporary descriptions of the latter. The vehicle had been constructed without springs, but its chief novelty lay in certain "improvements" patented by a civil engineer of Middlesex county, named Robert William Thomson, in the shape of what he called "noiseless tires." They were, in fact, the pioneer pneumatic tires, and the inventor had boldly started out to exhibit them on the wheels of a brougham weighing nearly 1200 pounds. This year of 1895, marking, as it does, the semi-centennial of so many important applications of India-rubber, seems a proper occasion for recalling Thomson's "patent aërial wheels," though it is not proposed to connect their invention, by any link, with the pneumatic tires which have since become more successful.




"The nature of my invention," said Thomson in his specification—No. 10,990 of 1845, "consists in the application of elastic bearings round the tires of wheels of carriages, rendering their motion easier, and diminishing the noise they make while in motion. I prefer employing for the purpose a hollow belt composed of some air-tight or water-tight material, such as Caoutchouc or Gutta-percha, and inflating it with air, whereby the wheels will in every part of their revolution present a cushion of air to the ground, or rail, or track on which they run."

This elastic belt, as Thomson called his inner tube, was composed of several thicknesses of canvas, each "saturated and covered on both sides with India-rubber or Gutta percha in a state of solution," laid one upon another, and each "cemented to the one immediately below it by a solution of India-rubber or Gutta-percha or other suitable cement." How the edges were joined to complete the belt as a tube is not mentioned, though other particulars follow: "The belt thus formed is then sulphurized by immersion in melted sulphur or exposure to the fumes of burning sulphur, which renders it more pliable and prevents its getting stiff on exposure to the cold; or the belt may be made of a single thickness of India-rubber or Gutta percha in a sheet state and sulphurized, as aforesaid, and then enclosed in a canvas cover."




But it was the outer casing or cover that first caught the public eye, and to understand its construction one must refer to the drawings. *A* represents the end of a spoke; *B* is a section of the wooden felloe, much broader than usual, and tired with steel; *C* is the inner tube; and *D* is the leather shoe. The latter was built upon the wheel by attaching two long strips of leather to the whole circumference with bolts inserted through the felloe and steel tire at every few inches. The outer edges of these strips were brought together over the inner tube and riveted together, after which the tire was complete. Or a third strip of leather might be used, as shown in the drawing to the right, being riveted to one of the base pieces and laced to the other. A pipe through which to inflate the inner tube was passed at one place through the tire of the wheel, and fitted with

an air-tight screw-cap. In the lower drawing is shown the "condenser" used for inflating the tube.

It was the size of Thomson's tires, next to the noiselessness of the wheels, that most attracted attention. They were about five inches in diameter, intended to be so inflated as to keep the tire of the wheel 2½ inches from the ground, which was thought to be "sufficient to admit of the wheel passing over any stones or other matters projecting beyond the general level of any ordinary turnpike road without the solid tire coming in contact with them." Wagons for the carriage of goods were expected to need tubes of a larger diameter and stronger materials.

In commenting upon the new style of wheels the *Mechanics' Magazine* (London), after the trial brougham had been drawn upwards of 1200 miles, without "the slightest symptoms of deterioration or decay" in the tires, had this to say: "It has so long been regarded as a settled thing, that friction is least with hard substances, and greatest with soft, that by a natural, though not perhaps strictly logical, course of induction, we inferred that, though in this case the noise might be less, the friction, and consequently the tractive power required, would be greater. We must candidly own that we little expected to find the very reverse of this to be the fact. Yet so it is." Then are given the results of experiments made with Thomson's wheels in the Regent's park by a noted firm of coach-builders, and verified by the editor, showing the comparative lightness of draft of the "aërial" wheels, both on a smooth and firm road and on a section covered with newly-broken stone, The table follows, showing draft in pounds:

| | Common Wheels. | Patent Wheels. | Saving by Pat. Wheels. |
|---|---|---|---|
| Over smooth, hard road..... .... .. | 45 | 28 | 60 per cent. |
| Over new-broken flints..... | 120 | 38½ | 310 per cent. |

Evidently our pioneer inventor had given much thought to his work, for in his specification he treated at length of the variations possible in the construction of the pneumatic tire, in order to make the patent as "broad" as possible. Some of it is good reading, too, as showing the ideas he entertained with regard to the properties of air in wheel-tires. Here is a quotation:

"Any undue displacement of the air at the bearing points of the wheel may be prevented by tying the tubes across at distances of two or three feet apart, so that each tube shall be divided into a number of separate air-tight compartments. Or . . . the belt may be formed of separate and distinct sections, each section having its own air-pipe [Think of having more than one valve to each wheel!], in which case the range of expansion and contraction being limited by the extent of the compartments, the belt must necessarily offer at each point of contact with the ground a greater degree of resistance to compression; and in some cases where, from the nature of the roadway, frequent concussions are likely to take place, a flat strap or band of sulphurized Caoutchouc or Gutta percha, or other suitable substance, of the width of the tire and about half an inch in thickness, might be interposed between the tire of the wheel and the elastic belt, so as to render it less liable to rupture in the event of its being jammed between the roadway and the tire."

One variation of Thomson's original suggestion of an inner tube was that several tubes might be employed for a single tire—up to nine, for instance. In such cases the ordinary air-pipe would have to be dispensed with, the inflation being accomplished by means of air-screws in one end of each tube before they were laced into the leathern envelope. It was suggested that the leather might be protected from wear by covering its outer surface with flat-headed metal rivets secured on the inside with small washers.

The latter end of the "aërial" wheel is not certainly known, but tradition has it that its inventor was much laughed at. Six years after the date of his pneumatic-tire patent Thomson's name appeared in the catalogue of the Great Exhibition of London, in connection with an invalid chair, of which "the wheel (in addition to an iron tire) is shod with a solid band of vulcanized India rubber said to be as durable as iron." As late as 1868 all the scientific journals in Europe were describing Thomson's solid India-rubber tires (five inches thick) for traction engines for common roads.

It is probable that John Boyd Dunlop, now in the enjoyment of fame and fortune as the result of experimenting with air-tires on his young son's tricycle, had never heard, when he applied for his first patent, of the pioneer inventor in this field. It is not impossible, however, that the pending litigation over the Dunlop patents may lead to a judicial decision somewhere that the essential features of the latter were embodied in Thomson's patent of 1845.

## GUTTA-PERCHA IS NOT RUBBER.

THERE is a curious popular confusion of Gutta-percha and India-rubber, and this is so wide-spread that it is almost hopeless to try to overcome it. It may be as useless to combat it as it is to try to teach the world at large that rubber is not melted and run into castings like iron, but we are moved to have our say. The reason for this mistake is in the apparent similarity that exists between black hard rubber and Gutta percha. They do look alike, and both in the beginning were from the sap of trees, and both have some points in common, but they are really as different as are gold and silver. Now will any rubber-man compare the two. Every rubber dealer ought to know this and not talk of rubber tissue when he means Gutta-percha tissue, or try to get some hard rubber to pack a horse's hoof when he really wants Gutta-percha.

## AN ENGLISH ENGINEER'S TESTIMONY.

AN INDIA RUBBER WORLD man happened aboard the ocean steamship *North Land* recently and while chatting with chief engineer Reynolds asked:

"What do you know about Rainbow Packing?"

"Know about it? I know all about it."

"Favorably or otherwise?"

"Let me tell you. We started with corrugated copper packings and they didn't do the work. Then we tried a variety of others and none of them stood. Finally I tried Rainbow and in spite of the severe work it lasted splendidly. You know our pressures on steam and hot water are very high, 266 lbs., 500 and 600 lbs. respectively. It is *the* packing for high pressures and you may quote me as saying so."

# DETERIORATION OF INDIA-RUBBER AND ITS CAUSES.

*By Frank W. Birchall, Chemist.*

THE causes of the deterioration of India-rubber are of vital interest, and their true elucidation lies in the patient investigation of the different physical and chemical changes caused by vulcanization and oxidation. The chemical changes will, of course, be best studied in the chemical laboratory, while the physical changes, especially those relating to structure, will be better investigated by microscopical observation, aided by photography, of the rubber in its various stages of manufacture.

The various processes of rubber-manufacture have arisen through empirical methods. The vulcanizing of the gum was an accidental discovery, and in the experimental attempts to hasten the process hard rubber was produced. Comparatively little work of a purely scientific nature has been performed on caoutchouc, but some valuable papers by various eminent chemists have been produced, dealing with the chemical composition and nature of the gum. By these gentlemen it has been placed among the large group of aromatic oils to which oil of turpentine and camphor belong.

The precise manner in which vulcanization takes place seems yet to be decided. It is probable, however, that the more soluble constituent is the most acted upon by sulphur in the vulcanizing process. This constituent may be separated by solution in chloroform and by precipitation therefrom by means of the addition of alcohol. Upon being heated in a closed tube to a temperature of 200° C. it remained unchanged. It is readily oxidized by the air and corresponds to the caoutchin-oil obtained by the dry distillation of rubber. Caoutchin is a greedy absorber of oxygen, becoming converted into a resinous mass more or less approximating shellac in hardness and brittleness. In its combination with sulphur it retains this property of being readily oxidized and it is to this fact that we may look for one of the causes of the hardening and cracking of rubber goods after storage.

The permeability of unvulcanized rubber to various gases is much greater than is commonly supposed to be the case, owing to its structure; while this peculiarity tends to increase the danger of oxidation the filling of the pores by compounding would have a tendency to lessen the opportunities of attack. It is quite possible, however, to introduce in this way substances which in themselves have an injurious effect upon the rubber or may increase the liability to oxidation. Certain compounds of sulphur have a marked tendency to rapid oxidation and though they are not usually found in rubber yet it is by no means certain that the compound of sulphur with caoutchouc does not possess this property to some degree.

Again the vulcanizing substance may contain an impurity highly disadvantageous to caoutchouc. Some years since a manufacturer of bicycle-tires was much troubled by their tendency to harden and crack after being stored. This deterioration was often observed after so short a time as four to six weeks. Suspicion fell upon the sulphuret of antimony used in vulcanizing, and examination revealed the fact that the suspected substance contained quite appreciable quantities of sulphuric acid left in it by insufficient washing during manufacture. The makers of the antimony sulphuret produced a new lot which was washed free of acid and submitted to the tire-manufacturer, who found it to be all that he could desire, and the trouble of hardening disappeared.

So too in another case a certain firm making small molded goods were bothered by regular crops of blisters of various sizes upon their goods. They were much puzzled to account for this unwelcome appearance and submitted the case to the writer, who, after examination of the conditions of manufacture, found everything to be first class excepting the vulcanizing compound. This, although apparently dry, contained several per cent. of water or moisture and to this was laid the charge of causing the trouble. Subsequent batches made with the carefully dried vulcanizing compound were entirely free from blisters.

The amount of sulphur required to vulcanize a given mass of caoutchouc is not over 2.5 per cent. It is, however, customary, especially in mechanical goods, to employ four times as much as this percentage in order to gain time. Apart from the general axiom that hurried work is poor work, the employment of a considerable excess of sulphur leads to the disfigurement of the finished article by what is called "bloom." The solubility of this efflorescence in boiling caustic alkalies seems to indicate that it consists simply of sulphur. It has been held by some that it is a compound of sulphur and caoutchouc. However that may be, it is certain that the treatment of the goods by boiling caustic-soda lye removes the unsightly appearance and leaves the surface of the rubber clean and of a pleasant fresh look. If the goods have been too heavily charged with sulphur the bloom will after a time reappear, working out from the interior of the mass. This cannot but have a tendency to increase the porous structure of the rubber, and lay it open to the attacks of its enemy, oxygen. In goods that are not treated by the soda solution, the handling removes the efflorescent sulphur with a result like that just mentioned.

In general, guided and taught by experience, the rubber-manufacturer has learned what to avoid in the compounding of rubber for vulcanization. At the same time so-called rubber substitutes are constantly being offered to the rubber trade with all the plausibility of an eager inventor or his interested agent.

It must be borne in mind that of such of these as contain rubber shoddy the process of oxidation has many times well begun, and this in its nature is highly favorable to the setting up of oxidation changes in the newly-manufactured goods.

Substitutes having for a base the various drying oils all depend upon oxidation for their consistency. It would be well enough if the progress of the oxidation could be arrested at a certain point, but, unfortunately, we have no means of accomplishing that desirable effect at present. These latter substitutes cannot be vulcanized in the sense that caoutchouc is vulcanized.

The coloring matters available for rubber work are few if the vulcanization is to be by means of heat. The metallic oxides usually employed can have only a mechanical action in separating the particles of rubber, and probably tend to preserve the compound by the more or less complete filling of the pores.

Oils, nearly all of which are affected readily by oxygen, are especially deleterious to rubber and should be carefully prevented from gaining access thereto. Sometimes copper oxide used in the dyeing of cloth and left in its fiber will prove an active agent, in combination with grease, to the destruction of rubber cloths.

Generally speaking, in the manufacture of rubber special attention should be paid to the dryness of the materials used in

compounding, the selection of stable compounds in coloring and vulcanizing matters, and the attainment of a mechanically close-grained body in the finished product.

Roundly summed up, the causes of the deterioration of rubber articles is to be ascribed to oxidation, however induced. The analyses of a deteriorating sample of rubber bring out this fact very clearly:

| | No. 1. Sound Elastic thread. | No. 2. Damaged but elastic to some extent. | No. 3. Brittle and very hard. |
|---|---|---|---|
| Carbon | 77.84 | 72.60 | 63 95 |
| Hydrogen | 10.36 | 11.51 | 9.21 |
| Sulphur | 5.28 | 2.02 | 2 33 |
| Oxygen | 6.52 | 13 87 | 24.51 |

The diminution of carbon, hydrogen, and sulphur is accompanied by a rise in the percentage of oxygen. Probably the hydrogen and sulphur have united in part to form sulphuretted hydrogen, while the carbon has been oxidized to carbonic acid by the oxygen.

In conclusion, a word respecting the outlook of chemistry upon the subject of rubber. The progress of chemical industry is such that it is not unreasonable to hope for the synthetical production of India-rubber. Its interesting relations with the group of terpenes among which oil of turpentine and camphor are to be found render work in this direction of absorbing pleasure. While the aromatic oils just mentioned have claimed the larger share of the attention of the chemist, it is to be hoped that some additional work may be forthcoming relative to the interesting class of polyterpenes of which caoutchouc is one.

## BRIEF ABSTRACTS OF RECENT RUBBER PATENTS.

AMONG recent patents issued by the United States Patent Office, embodying applications of India-rubber or Gutta-percha to a greater or less extent, have been the following. It is not practicable here to do more than to note the use of rubber in each case, with sufficient detail to enable those who are interested to decide whether or not to look into any particular patent more fully:

*BOOTS AND SHOES.*

No. 546,065.—Overshoe-Retainer for Felt Boots James Craven, Hastings, Mich.

A foot-gear, comprising an over-shoe having the catch, a felt boot, an elongated elastic metal plate attached at its upper end to the ankle portion of the boot, the lower end being free from all attachments, provided with an integral catch, and extending downward between the overshoe and boot, and adapted to hold itself with a spring resistance away from the boot and against the over-shoe catch, whereby the detachment of the overshoe when the boot is on the foot is facilitated.

No. 546,932.—Sole. Herman Mayer, Bradford, Pa

An improved method of making soles and heels, consisting in winding sheets of textile material and non-vulcanized rubber about a spindle to form a roll or block, the substituting a core of non-vulcanized rubber, then placing the block or roll in a press to conform it to the shape of the sole or heel, vulcanizing the rubber while in the press, and finally slicing the sole or heel from the block or roll after removing from the press.

No. 547,373.—Making Rubber Boots or Shoes. Henry J. Doughty, Providence, R. I.

The within described improvement in the manufacture of shoes and boots from vulcanizable material, the same consisting in forming from this material the vamp and dividing quarters, and divided soles and heel portions in connection with each other in final shape, then bringing the edges of the divided parts together and cementing, vulcanizing and finishing to form an article in one continuous piece.

*TIRES.*

No 546,329.—Inflating Device for Pneumatic Tires. Carl R. Hoffman, Krauschlitz, Germany.

The combination with a wheel rim and tire of a bicycle or similar vehicle, of a nipple engaging the rim and tire, a cylinder secured to the nipple and communicating with the interior of the tire, a piston rod working within the cylinder and projecting within the tire, a boss or enlargement on the latter against which the rods bear, a piston jointed to the rod and having a port to open communication between the spaces above and below the piston, a cut-off device or valve adapted to open and close the port in the manner specified, an air inlet valve at the outer end of the cylinder adapted to control the communication between the interior of the cylinder and the outer air, a spring surrounding the piston rod and secured fixedly at one end to the nipple and at its opposite end to the piston rod, a valve casing carried by the cylinder at one side, and a safety valve arranged in the casing and adapted to control the communication between the space upon the under side of the piston, and consequently the interior of the tire and the outer air.

No. 546,968.—Pneumatic Tire. Charles Wooley, London, Eng.

For securing a pneumatic tire on a wheel, the combination with two wires or rings carried by the tire cover, of two sets of hooks adapted to engage the exterior of the wheel at opposite sides thereof and to be pressed tightly thereagainst by the wires or rings on the inflation of the tire.

No. 547,175.—Pneumatic Wheel-Tire and Felly for Same. Edouard Michelin, Clermont-Ferrand, France, assignor to Michelin & Co., same place.

The combination of a felly, having at its sides channels or gutters, in the interior walls of which are annular cavities, an air tube or chamber placed around the felly, an external protecting envelope or bandage provided on the interiors of its margins with flanges to be received in the cavities, and fastening bands or rings inserted in the channels or gutters between the exterior of the envelope or bandage and the exterior walls of the channels or gutters.

*DRUGGISTS' SUNDRIES.*

No. 546,033.—Bottle-Holder. Jerry W. Shepard, Aurora, Ill.

A flexible holder for nursing bottles, composed entirely of textile material and comprising an open loop shaped pocket which is divided transversely, elastic webbing introduced between and connecting the adjacent edges of the pocket formed by such transverse division thereof, and a lateral extension of the pocket formed with a loop hem for the reception of a securing device by means of which the bottle holder may be attached to a pillow or other support.

No. 547,047.—Syringe. Horatio H. Thornton, East Providence, and William E. Hoyle, Providence, R. I.

A tip for vaginal syringes provided with a longitudinally perforated central portion and laterally extending flanges arranged spirally thereupon, the central portion being provided with perforations communicating with the longitudinal perforation and terminating between the flanges, the end of the tip being obtuse and of a greater diameter than the remaining portion.

No. 545,147.—Bottle. Burnham R. Benner, Lowell, Mass.

The combination with a bottle provided with a cork or stopper having a hole extended through it, of a liquid measuring device consisting of a glass tube inserted through the opening to attach the device to the cork and terminating within the

neck of the bottle to permit substantially the entire contents to be removed through the tube, and a bulb integral with the tube forming a liquid receiving chamber, and provided with an air inlet.

No. 545,234.—Syringe. William Kiel, Butler, N. J., assignor to the Butler Hard Rubber Company, New York, N. Y.

The combination in a syringe chamber of a barrel provided with a threaded opening, a threaded bushing or sleeve secured thereto, and a flexible tip adapted to be inserted between the bushing and threaded opening whereby the tip meshes or is forced into the thread to form a fluid tight joint.

*DENTAL RUBBER.*

No. 545,211.—Mounting for Artificial Teeth. Carl F. F. Schröder, Berlin, Germany.

The combination in a dental plate or obturator of a hollow metallic strengthening form and a surrounding coating of vulcanite.

No. 545,311.—Vulcanizing-Flask. Wistar P. Brown, Philadelphia, Pa.

The combination of the sectional vulcanizing flask, with a compressor, comprising a top plate, a bottom plate and connecting end bars, the top plate having notches for the reception of the jaws of a retaining wrench, and being provided with one or more screw plugs for bearing upon the top plate of the flask.

*MACHINERY.*

No. 544,782.—Roll for Rubber Mixing or other Mills. Edward F. Bragg, Boston, Mass., assignor to the Automatic Rubber-Mixer Company, same place.

The herein described composite roll, for rubber mixing and other machines, consisting of a body portion, and an outer imperforate sleeve, fitting it tightly, to relieve the body portion of stresses resulting from great pressure and changes in temperature.

*MECHANICAL GOODS.*

No. 546,359.—India-Rubber Buffer and Bearing Spring. Alexander Spencer, London, Eng.

A draw buffer or bearing spring comprising an India rubber body having a hole through it, a groove around its exterior, a groove within the hole, two cup rings made without nozzles and arranged back to back with an India rubber ring molded in between them, thus forming a compound ring which is forced into the exterior groove, and a compound nozzle comprising two metal rings with an India-rubber ring to serve as a supplementary spring molded in between them, the compound nozzle being forced into its proper place in the hole, and the hole and compound nozzle being formed the one with a groove the other with a head adapted to enter the groove and keep the compound nozzle in place.

No. 546,537.—Lawn-Sprinkler. Russell T. Joy, Tacoma, Wash.

A lawn sprinkler, comprising a casing having a central outlet opening in its top, a raised bottom provided with a threaded opening, a supporting flange or projection around the lower edge of the case below the bottom, an inlet opening at one side to which the hose or supply pipe may be coupled, and a cone having a threaded base screwed adjustably in the threaded bottom opening and provided with means for rotating it from the exterior of the case, the appex of the cone entering the outlet aperture.

*SPORTING GOODS.*

No. 546,540.—Ball-Bat. Albert H. Kennedy, Rockport, Ind.

In an elastic bat, the combination of the ferrules, the bolt, and the rubber spring or cushion.

No. 546,568.—Exercising-Machine. Alexander A. Whitely, St. Louis, Mo.

In an exercising machine, the combination of pulleys adapted to be attached to the wall or the like with an elastic cord passing about the pulleys and connecting them, and a stop near each end of such elastic cord to engage the case of the last pulley and prevent the cord passing therethrough, the stop consisting of a collar or the like with a central aperture of less cross-section than the cross section of the cord, and a slot opening into such aperture so that the elastic cord can be stretched and introduced into the aperture through the slot and partially relaxed so as to be cramped by the collar and held in position.

*NOTIONS.*

No. 546,490.—Garter. Bernard Dreyfus, New York, N. Y.

In a garter, the combination, with a body piece, of elastic end pieces and fastening devices attached thereto, and a soft rubber lining on the body piece, which lining is provided on its exposed surface, throughout, with small protuberances.

No. 547,057.—Cleaning Device for Kid Gloves, &c. Charles J. Bailey, Newton, Mass.

As an improved article of manufacture, the within described glove cleaner composed of a black flexible throughout and provided with a handle, and having the independent integral hollow frusto-conical projections on one side whose walls taper to a thin edge from the back and are adapted to operate by friction and suction.

*INSULATED WIRE.*

No. 546,579.—Insulated Electric Conductor. Franz Clouth, Cologne, Germany.

The combination with an electrical conducting wire or conductor, of a covering layer of caoutchouc surrounding the conductor or wire and a layer of Gutta-percha surrounding and inclosing the caoutchouc.

*SURGICAL GOODS.*

No. 547,076.—Eugene Hubbell, St. Paul, assignor of one-half to Lewis Cavnah, Minneapolis, Minn.

A rectal dilator composed of separable hollow sections in alignment with each other, having a communicating passage, and means for closing the same, one section being smaller than the other, and each being composed of hard rubber and being placed base to base so that one portion will form a handle, and the walls of each section being slightly contracted toward the central portion of the dilator, whereby when either of the separable portions is filled with hot or cold liquid and placed in position the device will be self retaining.

*RUBBER COMPOUND.*

No. 547,120.—Insulating Compound. Salomon Heimann, New York, N. Y., assignor of eleven-twentieths to Leopole Katzenstein, same place.

An electrical conducting wire, provided with a coating of water glass and pulverized glass, which is covered by a second coating, composed of a mixture of pulverized asbestos, pulverized glass, rubber, rosin oil, mirbane oil, castor oil and dissolved celluloid.

*MISCELLANEOUS.*

No. 545,879.—Interfering-Pad for Horses. Eric Ericsson, Wilmington, Del.

An interfering pad, adapted to be attached to the side of the animal's hoof, comprising a pad having an angular attached tongue, connected with the interior portion of the pad and constructed to extend between the hoof and the shoe, and the attaching straps, one connected to the pad near the upper inner corner and the other near the opposite lower inner corner, and a rubber tube surrounding one of the straps.

No. 546,145.—Cushioned Horseshoe. Hiram H. Gribbs, Indianapolis, Ind.

A horse shoe comprising a lower metallic member provided on the under side with downwardly extending flanges continuously about its outer and inner periphery with recesses between them, and provided on the upper side with recesses, such recesses not extending through the shoe, and an elastic member provided with extensions adapted to fit in such upper recesses.

No. 546,405.—Artificial Foot. George E. Marks, New York, N. Y., and William L. Marks, Sound Beach, Conn.

The artificial foot consisting of the inelastic core, the sponge rubber portion in the outline of the foot and inclosing the core, and the continuous spring embedded in the rubber substan-

tially midway between the core and the sole of the foot and extending lengthwise of the foot, the spring being unrestrained except by the rubber inclosing it.

No. 546,668.—Bicycle. Walter Johnson, Denver, Colo., assignor of one-half to Charles Twist and Frederick J. Sterner, same place.

In a bicycle, the combination with an outer frame, of a smaller frame enclosed therein; spokes connecting the two frames, a seat support passing through parts of the two frames, and adapted to move vertically therein, and a pneumatic cushion mounted in the inner frame and supporting the seat support.

No. 546,816.—Key for Type-Writers. William B. Lillard, New Orleans, La.

The combination in a key for typewriting or like machines, of a socket attached to or integral with the key, and a rubber cap-piece mounted in the socket and provided with a plurality of upwardly projecting prongs or tongues adapted to be struck by the finger in operating the key.

No. 547,017.—Compound Horseshoe. Orville L. Leach, Providence, R. I.

The combination of a horseshoe, composed of two sections and an interposed elastic filling and means of connecting the sections at the toe, and means for drawing the lower section upward and rearward and connecting them at the heel portions or points rear of the toe.

*TRADE MARK.*

No. 27,104.—Armpit-Shields. I. B. Kleinert Rubber Company, New York, N. Y.

Essential feature.—The word "Gossamer," on the representation of a cloud, from the top of which radiate lines representing the rays of the sun.

*DESIGN PATENT.*

No. 24,679.—Belt. Amadee Spadone, New York, N. Y.

Filed May 14, 1895. Serial No. 549,321. Term of patent 7 years.

## FROM A PIONEER IN THE RUBBER BUSINESS.

TO THE EDITOR OF THE INDIA RUBBER WORLD: As far back as 1840, there was a rubber factory in Salem, Mass., which was burned in April, 1848. It was owned and run by a man named Jackson, whom I was well acquainted with. The mill was used for the manufacture of rubber shoes and had an office next to mine at No. 18 Central street, Boston. I was at that time agent for N. Hayward & Co.'s shoes, which I sold for four years, also selling from his factory in Salem in 1845. At that time I did a large business in the old Pará rubbers which we used to line and point with fur. The first vulcanized shoe I ever saw was made by Hayward in 1845, in a little factory in Lisbon, Connecticut. I took the whole contract that year of $15,000 worth and sold them at Salem. The next year I went to Boston. I believe that I am the only one left of the old rubber men and know the whole history from 1840 to 1867, when I removed West and have had nothing to do with rubber since. I think the first importer of rubber in Salem was Robert Upton, after that David and Thomas Pingree, Edward D. Kimball, and John Bertram.

After Hayward discovered the vulcanized rubber, the rubber was used for other purposes. They began to import it in New York in bulk, and it sold for years at eighteen cents a pound. I have sold a great many thousand pounds for those importers.

My office in Boston used to be headquarters for all the dealers. As I used to live in Salem and go in Boston every day I knew what was on hand and the run.

It is pretty hard to write a history of my experience in rubber, especially as I have not thought of it in late years; yet I knew all the particulars then. S. B. PIERCE.

Waukegan, Ill., October, 1895.

## A MICHIGAN DRUGGIST WANTS TO KNOW.

TO THE EDITOR OF THE INDIA RUBBER WORLD: Will you kindly give me a formula for making colorless cement of India rubber? Will you, also, inform me what chemists use in their laboratories for rendering bottle-stoppers perfectly air-tight? J. H. G.

Lansing, Mich., September 29, 1895.

[A VERY old formula which we have never tried, but should think might answer the purpose, is 75 grammes of pure Pará rubber (the inner part of the biscuit if possible), mixed with chloroform or bi-sulphid of carbon, after which 15 grammes of mastic may be added; the whole to be left in a warm place a number of days, until it is thoroughly dissolved.

For the laboratory, India-rubber that has been *melted* is used to keep stoppers air-tight, not only for the reason that it is a good air-excluder but, also, because it has the faculty of remaining forever soft; that is, it never dries up and never hardens. While the stopper may be left in place for years, it is as easily withdrawn at the end of that time as it would be at the end of a week.—THE EDITOR.]

## RUBBER-HEELED SHOES IN THE ARMY.

THE United States war department has experienced a trouble which is not unknown among officials in a like position in other countries—the selection of shoes suited to the wants of the troops. Complaints regarding shoes furnished the army have probably been more numerous than on any other articles. In the efforts to provide a serviceable and comfortable shoe a great many tests and experiments have been made. The latest experiment was suggested, no doubt, by the investigations made by the French military surgeons into the merits of elastic-heeled shoes, particularly for soldiers while marching. In a letter to THE INDIA RUBBER WORLD the acting quartermaster-general of the army writes from Washington, in regard to rubber-heel lifts for army shoes, as follows:

"One hundred pairs of shoes provided with such lifts, and which latter were purchased from Messrs. C. J. Bailey & Co., of Boston, Mass., have been subjected to trial at the post of Fort Leavenworth, Kans. From reports received, it would seem that in the main the rubber heel is preferred to the leather heel, and wears almost equally as well. These favorable reports have induced the quartermaster-general to purchase 500 pairs of shoes with rubber heels of the same kind as heretofore procured, for further and more extended trial in active service. These shoes will be procured of Mr. P. J. Hallahan, of Philadelphia, Pa."

Bailey's rubber heel-cushion, which is the device above referred to, is not a rubber heel in the true sense, but is a sheet of rubber, with cup-like projections, as shown in the cut, to be placed inside the shoe under the heel of the wearer. It is leather covered next to the foot. They have been offered to the trade hitherto as particularly adapted to those afflicted with spinal troubles, on account of tending to lessen the shock or jar of the body in walking.

CONGO "skin rubber" is rubber which has been careful prepared for market by the natives, with a good lining of earth and other materials not essential to rubber-manufacture, in the belief that stupid white traders, unable to see inside, will not detect the fraud until it is too late to profit by the discovery. The rubber balls are sure to be cut open, however, before any European money is paid for it, and the outer shell of the balls is all that is bought for rubber.

# THE BASIS OF THE CHEWING-GUM TRADE.

*By Gustav Heinsohn.*

CHICLE is a name applied to the material which serves as the basis of the "chewing-gums" in such wide use of late years. It is obtained in Mexico by tapping trees in the manner practised in India-rubber forests, and the product has qualities which, at one time, suggested the idea of its use in connection with, or as a substitute for, caoutchouc. Chicle lacks, however, the two important qualities of tenacity (or toughness) and elasticity, for which reason all attempts to use it in the rubber-factory were failures. But it has since become an article of commercial importance, on account of its fitness for chewing-gums and of the growing popularity of this class of goods. The price of chicle probably averages as high as any India-rubber not of the Pará grades, while it has sold in the New York market for as much as $1 a pound. Fifty cents is not deemed a high price. There were chewing-gums in use before chicle was known, but they never were in such demand as those which have since been made, based upon this Mexican product. The extent of the sale of these gums, steady, constant, and at low price, to young and old, rich and poor, must have resulted already in immense profits. A single chewing-gum manufacturing concern for several years past has been a corporation with $1,000,000 of capital, and there are several other extensive manufacturers. One of the others advertises an output for 1893 of 138,860,000 pieces. As the retail price for such "pieces" was 1 cent each, the company's sales must have reached a very respectable cash value.

Why people chew gum is a question which probably few of them pause to consider. It would be a question which the medical profession might investigate—since the chewing of something, under certain circumstances, is an almost world-wide tendency which must mark a positive human need. Mr. Thomas Adams claims to have been the pioneer in the use of chicle for chewing-gums. He had imported some of the article from Mexico for other purposes, but he was not driven by failures to the belief that chicle was a useless product of nature. Remembering then the habit among the Mexican natives of chewing the pure gum of the chicle-shrub, he turned his attention to its use in making chewing-gum. In 1871 he obtained a patent on chewing-gum, made from chicle, and in a certain specified manner, as a new article of manufacture. Since that time his business has grown steadily, although many competitors have come into the field. No doubt the use of such gums has done much to check tobacco-chewing. Besides, many physicians prescribe them as tending to promote the appetite and to facilitate digestion—properties ascribed to the juices of the tree by the Mexicans—and also as a substitute for smoking, in the belief that the nicotine habit in many persons is a result less of a craving for tobacco than of a certain nervous derangement which will be corrected by holding something in the mouth, or chewing it. As above suggested, the whole subject is one that ought to be of interest for study by medical men.

Chicle is yielded by a kind of wild pear-tree, of the genus *Achras*, of the natural order *Sapotaceæ*. There is but a single species, the *Achras sapota*. The same natural order, by the way, embraces the genus *Isonandra*, which yields Gutta-percha, and the genus *Mimusops*, which includes the bully-tree or balata. Indeed the chicle- and balata-trees are confounded to this day by such accepted authorities in medicine as "The National Dispensatory" and Foster's "Medical Dictionary." It is an ever-green tree, with thick shining leaves and milky sap, and has been cultivated in places for its edible fruit—the "sapodilla plum," which is about as large as a quince and as yellow inside as a carrot, having two seeds. It flourishes in rich, loamy soil, and can be propagated from cuttings. The bark (sometimes described as "Jamaica bark") is astringent and has been used as a febrifuge, instead of the cinchona bark. The seeds, also used medicinally, are aperient and diuretic. The Aztec name for the tree was *cochitzapotl;* the origin of the name "chicle" has not been traced by the writer of this article. The gum is more plastic and more easily kneaded than Caoutchouc, and more elastic than Gutta-percha. At ordinary temperatures it is solid and horny, but it softens at 49° C., and can then be molded. Towards solvents it behaves like Gutta-percha, and when bleached it is very white.

The list of chewing-gum patents in the United States is as follows:

No. 93,141—Chewing-Gum Compound. Amos H. Tyler, Toledo, Ohio, July 27, 1869.

No. 98,304—Chewing-Gum. William F. Semple, Mt. Vernon, Ohio, December 28, 1869.

No. 107,693—Chewing-Gum Weston W. Kilbourn, Sanford, N. Y., September 27, 1870.

No. 111,798—Chewing-Gum. Thomas Adams, assignee to John D. Adams, Hudson City, N. J., February 14, 1871.

No. 134,022—Chewing-Gum. Nathan Wood, Portland, Me., December 17, 1872.

No. 195,579—Preparation of Chewing-Gum. Robert Cotter, Houston, Texas, September 25, 1877.

No. 280,115—Chewing-Gum, and the Manufacture of the Same. Auguste H. Aubin, New York city, June 26, 1883.

No. 378,637—Machine for Manufacturing Chewing-Gum. William J. White, Cleveland, Ohio, February 28, 1888.

The details of Tyler's patent and of some of the others cannot be given here, since the United States patent specifications for those years were not published in full as at present. Semple's claim was on "the combination of rubber with other articles, in any proportions adapted to the formation of an acceptable chewing-gum." It is not known to the writer what Kilbourn claimed under his patent, but Thomas Adams, as above pointed out, introduced chicle in his specification and thus became the pioneer in this use of the gum. The methods pursued, however, cannot be stated. The Adams patent expired long ago, but the processes employed in the factory are still a guarded secret. It may be of interest, however, to study the specifications of the later patents as revealing something of the art.

Thus Nathan Wood (Patent No. 134,022) specified chicle as the base of his compound. He refined it by the common methods for purifying vegetable gums, resins, or balsams, after which he added spruce gum or other vegetable aromatic gum or resin, in the proportion of 1 part of the latter to 2 parts of chicle. The gums were combined and worked together by the use of heat, until the mass was homogeneous, after which it was allowed to cool and was cut into cakes of marketable size. "Tolu" gum was specified as a desirable gum to combine with chicle. The latter, according to this inventor, "supplies all the needed mechanical qualities of durability, elasticity, and ductility—while in the range of vegetable gums almost any desired flavor or medicinal effect may be produced or exhibited."

Cotter's patent (No. 195,579) related to the reduction of "the gum of the sapota-tree" by first pulverizing, then sifting, and

afterward subjecting it to a gentle heat—whether by water-bath, steam, or other means of applying heat gradually. It was claimed that by the treatment proposed the chicle was ready for use without combination with any other substance, "the gum itself containing sufficient aqueous properties to cause it to remain in this state." Aubin's patent covered a preparation of paraffin and sugar, in proportions of 1 to 3, without any reference to chicle.

The last patent on the list relates to an improved mechanical plant for chewing-gum manufacture, involving the use of chicle. The inventor, White, like Adams, became the head of a great manufacturing business, built upon chewing-gum alone. As set forth in this specification, which bears a date seventeen years later than the Adams patent, all the mixing of gums was done in small kettles, of only a few gallons capacity, provided with hot-water jackets. Each of these kettles required a separate furnace and an attendant to stand by to attend to the stirring. His invention consisted of "a cylindrical kettle," having outside a heating jacket, and inside a combined scraper and stirrer.

The White establishment is at Cleveland, Ohio, where also is that of Beeman, another large manufacturer. In addition to those named, a number of smaller but growing establishments have come into existence more recently. Some idea of the processes used can be gained from the details above. The materials used in combination with chicle are numerous, and they differ according to the desired character of the product, which may be intended as a vehicle for sweets or other flavors, or for medicinal agents. So far the manufacture of chewing-gums has been confined mainly to the United States, though a considerable export trade has grown up. The Adams company for some years past have operated a branch factory at Toronto in order to evade the Canadian tariff, but the crude chicle is admitted free of duty in order to encourage home industry.

It was in 1869 that Thomas Adams began the manufacture, in a small way, on Vesey street, of his "New York" chewing-gum. He was successful, and the business soon began to expand. In 1872 the "Tutti-Frutti" was introduced, and other brands followed, until they now number a dozen. From Vesey the business was removed to Murray street, New York, and thence, in 1888, to Sands street, Brooklyn, where the factory now occupies Nos. 148–156. They have a six-story building 100 × 100 feet, to which has recently been added a building to accommodate the company's offices. The firm style in time became Adams & Sons, which in turn was succeeded, in 1891, by the incorporated Adams & Sons Co. The officers are Thomas Adams, Jr., president; H. M. Adams, vice-president; Henry Rowley, secretary-treasurer; and these, with Thomas Adams, Sr., and John D. Adams, form the board of directors. The originator of the firm, though now seventy-seven years of age, still takes an active interest in the business. Employment is given for 350 hands, and the annual product is said to average 1,000,000 pieces per hand employed. The company have agencies in London and Melbourne, and most of the large American cities.

## PRICES AND OTHER POINTS IN THE RUBBER-STAMP TRADE.

THE manufacture and use of rubber stamps are of constantly-growing importance as a feature of the rubber trade. The volume of this business in the United States is estimated by a prominent member of the trade at more than $500,000 a year. A single stamp manufacturer reports the consumption of from 350 to 400 pounds of rubber per month, and, as there are about 200 concerns in the country who were regarded as eligible to membership in the late National Stamp and Stencil Association, it can be seen that the demand for crude rubber from this source is already no small item. The increase of the business is due both to an enlarged number of buyers of stamps in established lines, and also to the introduction of stamps for new uses.

It is in the labeling of packages that the next important extension of the use of rubber stamps seems probable, in place of the stencil-plates hitherto so widely used for this purpose. Recent improvements in hand-stamps permit the marking of a box or bag, or an article of merchandise, with a single impression, with results more satisfactory than from the best stenciling. Some recent examples of stamp-making in this line have yielded really ornamental effects, as a result of which we may in time expect a higher regard for attractiveness in the putting-up of certain classes of goods. One objection to rubber stamps long was that the inks in use were unsatisfactory for some purposes—that they blurred, or were not indelible. This objection has had its effect in preventing the adoption of rubber dating-stamps for letters in the postoffices. But the objection has been so far overcome of late that the stamp makers have hopes of securing a wide new field for their trade. Already the postal money-order service has been equipped with rubber stamps.

The severest test of the rubber stamp, perhaps, has been in recent experiments in labeling cotton fire-hose, instead of stenciling, as heretofore. A stamp-maker has recently made a stamp eighteen inches in length, with two or three lines of lettering, for stamping cotton hose with the brand and the name of the hose-manufacturer. With a single impression all this can be plainly stamped upon the hose, whereas the painting of the letters through a stencil-plate is tedious and does not always yield satisfactory results. While this class of work is still in an experimental stage, it promises to be entirely successful.

The question of price-regulation, by the way, long has been a serious one in the rubber-stamp trade. It lay at the bottom of the organization, two years ago, of the National Stamp and Stencil Association, while the failure of the plans proposed for regulation led lately to its quiet death. Only about fifty of the 200 members of the trade considered eligible ever joined, and as their joining involved only the signing of an agreement as to prices, with no penalty for breaking it, and no machinery for detecting violations of the agreement, the association never possessed any real strength. When it was discovered that retail prices could not be maintained, in the face of widespread competition on the part of large and small stamp-makers alike, it was proposed to attempt the regulation of wholesale prices alone, leaving every one free to charge at retail whatever he could get. In the opinion of some of the makers the unsettled condition of prices is partly due to the wide margin between the wholesale and the retail lists quoted, tempting the inexperienced or unscrupulous to reckless cutting. But even here a sufficient degree of coöperation could not be obtained, and every man in the trade is now fighting for himself.

The sale of stamp-outfits and even of stamps abroad is steadily growing. Rubber stamps are coming into use by banks, railway companies, and other great corporations in Europe, and considerable is being done in the same lines in South America and Australia. The writer, on entering the office of a New York stamp-manufacturer, saw a large box of stamp goods being marked for shipment to Bombay. At the same place he was assured that American stamping-pads are universally prefered to those made in Germany or other countries abroad, and that they are now shipped to every continent.

## THE FACTORY TESTING OF VULCANIZED INDIA-RUBBER COVERED CABLES AND WIRES.*

NOTWITHSTANDING the number of articles which have already been written on the above subject, I think there may still be a few points of interest to electrical engineers in the following paragraphs.

Firstly, as regards the instruments required. A Thomson mirror galvanometer having a resistance of from ten to twenty thousand ohms is the most useful type; if possible this should be fitted with what is known as a governing coil, to be used in conjunction with a small independent battery and key, for checking the violent swing of the mirror after the passage of an abnormal current.

The next thing on the list is a Wheatstone bridge of the usual plug post-office pattern, graduated up to five thousand ohms. We require also a short circuit galvanometer key, which as its name implies, forms a short circuit across the terminals of that instrument when in its normal position, a reversing battery, key or switch, a current reverser for use in the galvanometer circuit, and a current distributor for regulating by the manipulation of a single plug the number of cells in use. As regards the type of galvanometer, scale and fittings, Jacob's transparent system is the most convenient, as it can be fitted to directly face the experimenter instead of his having to take his readings out of the corner of one eye, as is the case in the old style of scale and lamp. The batteries most commonly used are of the Leclanché type, but generally speaking, any cell which has a fairly constant E. M. F. under ordinary conditions will answer. They should number about four hundred, so as to render a maximum voltage of from five to six hundred available for testing. They should stand in dry, well-insulated wooden trays in sets of from twenty to fifty, so that one set at a time can be disconnected for cleaning and charging purposes without disturbing the remainder. They should be kept in a cool dry position, and should have constant attention, no dirty cell being allowed to remain in circuit longer than is absolutely necessary.

The galvanometer should be set up on a solid brick base on the ground floor, as far away as possible from the influence of moving machinery, shafting, etc. All instruments, especially the galvanometer, should be well insulated on glass, vulcanite, paraffin, wax, or other suitable insulators.

In addition to the aforementioned instruments, we also require a standard condenser of the usual type, having a capacity of about one-third of a microfarad, a condenser discharge key a standard one megohm resistance, a spirit lamp, some Guttapercha covered conductor for connections (about No. 18 S. W. G.), some pure white paraffin wax, and a vessel to heat it in, a pair of jointers' pliers, six small cable connectors and a sharp knife.

For high tension cable, *i. e.*, cable to be used on circuits having a potential difference between their poles of from 1000 volts upwards, we require also a transformer capable of working up to 10,000 volts and a source of alternating current for the same, preferably an independent machine, as the E.M.F. required for testing will be variable.

I have omitted to describe in detail all the instruments used, but a reference to any of the existing text books on the subject will dispel all ignorance in that direction.

Now to work. The tests most commonly taken of cables at the factory are for insulation, capacity, copper resistance, and continuity, and, in the case of high tension cables, what is most important and generally known as the "Flashing" test.

I shall first describe the insulation test, which consists in comparing the insulation resistance of the cable with the standard resistance of, in this case one megohm.

We first proceed to take what is known as the "constant" for the test. If we depress both connections one side of the battery reversing key and also the galvanometer key, the current will flow from the battery through the earth to the standard resistance, thence to the galvanometer, and from the latter back to the opposite terminal of the battery. In practice, though, it will be found that this will cause the spot to be violently deflected right off the scale; we must therefore introduce a shunt by means of the Wheatstone bridge across the terminals of the galvanometer so as to bring the spot conveniently on the scale. We now depress the galvanometer key and fix it down by means of its cam, and, having unplugged the necessary shunt in the bridge, we next depress one side of the battery key; this gives us a reading after the spot has settled down of say D°. This, however, is not the true deflection owing to the shunt, and we must find what is known as the "multiplying power" of the latter. This is obtained by adding the shunt to the resistance of the galvanometer at the time of taking the test (see table of resistances at various temperatures supplied with the instrument), and dividing the result by the shunt in other words the formula for the multiplying power of the shunt is $\frac{G+S}{S}$ where G is the resistance of the galvanometer and S the shunt. The deflection D° must now be multiplied by this to give the true deflection due to the battery working through the standard resistance. Having obtained our constant and released our keys, the ends of the cable are next prepared fortesting. The latter has, with the exception of a foot or two at the ends, been totally immersed in a tank of water having a temperature of 60° F., for twenty-four hours. To prepare the ends for testing, the copper conductor must be laid bare for about one inch, and the exterior braid and tape removed from the India-rubber for, say another three inches. The rubber should then be pared down to the copper (after the manner of pointing a lead pencil) with a sharp knife, thus exposing a surface of perfectly clean cut rubber. The ends should then be immediately immersed for about half a minute in hot melted paraffin wax which has been prepared beforehand. The cable is then ready for testing.

J. WARREN.

* From *Electricity*, London.

## HOLLOW PUMPKINS IN RUBBER-MAKING.

BY G. TABAN.

THE Man-Who-Knows-Too-Much has broken out again, and of course he's giving away the secrets of the "Indian-rubber" business. You see he insists upon the original spelling. To quote from the New York *Commercial Advertiser*, here is his account of the method of making rubber:

> The bark of the tree is thoroughly cleansed, after which they cut through the bark and let the milky sap run into clay troughs or hollow pumpkins. The sap is then dried. For practical use it is cooked for two or three hours. It is finally given chemical treatment—vulcanized.

It is not strange that Rubber common stays down at 40 when irresponsible fellows can get access to the newspapers and leak facts in this fashion. Everybody may not know that the reason why rubber production has always been located in the remotest parts of the earth is that its secrets might be guarded, as a help to maintaining prices. When we began to get rubber from Pará that place was not only remote, but it had a death-rate of 75 per cent., which was enough to keep away the merely curious. Now that people have learned how to live at Pará,

and they are getting up a world's fair, the rubber industry has been moved up the Amazon to less civilized localities. Doubtless it finally will be centered in Bolivia—the most inaccessible state in the world—beyond the "Cauldron of Hell" and the sixteen other cataracts on the Madeira. All this secresy is maintained in order that the consumers of rubber may be forced to keep on paying high prices for an article that ought to be cheaper by weight than aluminum. But these secrets are in danger.

Let us get back to the facts which this scribbler has let loose. He's right about the hollow pumpkins. They do use just such receptacles for the milky sap, because pumpkins are the freest gifts of nature in the hothouse climate of the Amazon. They grow luxuriously enough in the United States, but in a valley where orchids flourish out-of-doors every day in the year—why pumpkins overrun the land without any human help. Tin cups be blowed! Why one shipload of such things would cost more at Pará than all the pumpkins needed for a hundred years.

By the way, the chief credit due to Yankee genius in the rubber country is for the introduction of "hollow pumpkins." It seems that from the beginning of time the native Brazilians supposed pumpkins to be solid. They used to lay one against a rubber-tree and let the milky sap exude over it and dry on the outside, in the sun, scraping off the dried rubber when it seemed ready for market. But the pie-eating Yankees showed the Indians some new uses for pumpkins, and, slashing them through with the Connecticut *machetes*, revealed the capacious interiors of the yellow fruit. It is all rot about the laborious processes of smoking thin layers of rubber on the end of a flat stick—a method necessarily expensive because no place can be found in it for machinery. Why, all that is necessary is to gather the shell of a pumpkin full of milky sap and cook it two or three hours, and you have the "biscuit"-like forms of rubber which reach New York by the Pará steamers. One thing that the *Advertiser* man fails to mention is that the pumpkin cooked in this way is valued by the Indian for his dessert, so that there is no waste. He has a pumpkin pie with every cooking.

I have already mentioned the discharge of the *Advertiser's* rubber expert from the service of the United States Rubber Co. because he was found planting rubber in the ground to produce a new crop. But now that he has given away the hollow-pumpkin snap, no doubt the directors will repent their action. They ought to have been able to find some means of making him useful to them, if only by using his pumpkin-like head to cook rubber in.

## OLD SHOES AND OTHER RUBBER SCRAP.

THE number of persons in New York city who profit directly from the handling of old rubber shoes is enough to fill a good-sized town, and yet no one engaged in the trade claims to know its yearly volume in the city or the money value represented. The 500 or more licensed junk-carts, most of which are pushed about the streets by rag-collectors, are all liable daily to pick up some rubber scrap. The ash-cans and garbage-barrels standing on the sidewalks early in the day are eagerly scanned by the push-cart men, in the hope that a pair of old rubbers may be discovered now and then. The same fellows make frequent excursions into the basements of residences in quest of rags, but especially of rubber and bottles—both of which are salable to the nearest junk-dealer for spot cash. From other houses such articles of refuse find their way direct to the junk-stores without the agency of the push-cart conductors. Finally, in the mass of rags and other junk collected by the contractors at the city garbage-dumps, there is a considerable quantity of rubber scrap, which finds its way to the larger junk-dealers. The latter dispose of their holdings from time to time to the rubber-reclaiming people, who do not care to buy in smaller lots than five or ten tons, while their preference is for transactions by the carload.

When it comes to determining how much rubber scrap is gathered in New York city alone, the difficulty is that the rubber-reclaiming companies, when they buy from New York junk-dealers, get all the material which has been shipped to the latter from the surrounding country, and even from distant states. One who stands at the entrance to a large rag store will find a steady procession of wagons, big and little, bringing waste materials from all over the city, from Brooklyn and New Jersey, and from the railway stations through which freight from the whole country reaches New York. When these rags and other articles have been sorted, and the rubber scrap laid aside, it is impossible to say how much of it should be credited to the city alone.

A well-informed buyer of old rubbers was asked for his opinion of an estimate of the amount gathered in New York, based upon the comparative population of the city and the rest of the United States in which rubbers are largely worn. This estimate gave 900 tons a year.

"Five hundred tons would be a safer figure," said he; "and yet I don't know whether 400 or 750 tons would be the more accurate statement. I am not willing to be quoted as the author of any estimate." It was found that he expressed the sentiments of many others in the trade.

The value of other rubber wastes than old shoes is beginning to be discussed with interest. It is only natural that it should be, with an annual production of bicycle-tires already exceeding a million, made for the most part of good rubber and certain to reach the scrap-heap after at least the second season's use.

Said a dealer: "If I had acted upon my own judgment, I should have been before this a heavy buyer of bicycle-tires and similar scrap. I am not a speculator, however, but confine my purchases to meeting a definite demand, and manufacturers were slow in sharing my opinion as to the coming importance of bicycle-tire scrap. They are now coming to my way of thinking, and I expect to see a large movement in other forms of scrap than old shoes."

A manufacturer of reclaimed rubber said: "I have made experiments to a considerable extent upon old bicycle-tires, and while I have not completed my investigations, I am inclined to think that they will yet figure largely in the trade. For the present, however, we are confining our purchases to old shoes, the proper treatment of which we are familiar with, and the value of which we know how to estimate."

A rag-dealer said: "We are ready to buy old bicycle-tires very largely, but not to indicate the direction in which they are wanted."

## DEATH OF A RUBBER-MAN.

AT Trenton, N. J., on September 29, Charles Leroy Welling, well known in the rubber trade, was found dead in his father's house, having committed suicide. He was forty-one years of age, a college-bred man, a member of the bar, and very popular in club life. He had been connected for several years with the Whitehead Brothers Rubber Co., and of late had been a traveling salesman for them. No cause for suicide is known. He was the son of Lewis Welling, who is interested in the rubber industry.

## THE CONDITION OF THE MACKINTOSH TRADE.

OCTOBER as a month had an exceptional weather record, from the standpoint of the rubber trade, and especially in the waterproof-clothing branch. There was scarcely a rainy day during the whole month in many parts of the United States, and while of course people do not confine their buying of mackintoshes to rainy weather, a storm now and then does help mightily to set them thinking about the desirability of waterproof goods. It is the same as with umbrellas and rubber shoes, the demand for which is regulated by nothing else so much as by the weather. A leading house in the mackintosh trade in New York reports that up to October 1 their volume of sales for the year was largely in excess of the record for a corresponding period in 1894, their factory having been kept running steadily since the beginning of the year. But the movement of these goods to the consumer, which usually is active during October, had scarcely begun at the close of last month. The result was that the customary second crop of orders from agents and jobbers, to replace goods sold during the month to consumers, failed to arrive in October this year. Inquiries in many places brought the stereotyped reply that the trade is dull so far as sales from retail stores are concerned—and all because the weather has been too charming.

But the weather is not the only fickle thing with which the makers of and dealers in waterproof goods have to reckon. The ever-changing taste of the fair sex—and women are largely in the majority in the buying of mackintoshes—may make the season's trade of a house profitable or otherwise. "The kind of goods that will be in demand at any given time is impossible to predict with any certainty," said the buyer in the cloak department of a great dry-goods house who has been long in the business and is considered a successful man. "I may go to Paris and buy capes and come home and find that the ladies all want jackets, and everything else is uncertain in the same way. But there is less variety, or range, in ladies' mackintoshes, and styles change less frequently and less radically, so that this branch of our trade is perhaps less difficult to control."

In ladies' goods it cannot be said that any important changes in shapes are to be noted in the stores this fall, as compared with last year. There are double-cape and triple-cape mackintoshes, and others with no capes at all, and while one store may report a heavier demand for a particular style, it will be in less demand in another house. Take, for instance, the style known as "golf-cape" goods. The general expression seems to be that these are going out of vogue. Yet a large store on Broadway has recently kept a liberal display of them in the front windows. It was stated, however, that it was merely as an experiment; the presence of the goods indicated neither that golf-capes were in demand nor that they were trying to force them upon buyers.

It was interesting, as evidence of the diversified character of the mackintosh trade, after hearing so much of the passing of the golf-cape, to enter a great store and to be told that this style of garment had gained rather than lost favor with the customers of that house. "We introduced the golf-cape in the United States," said the gentleman in charge of the mackintosh goods, "and they have been popular with our trade ever since. The introduction of golfing in this country has had nothing to do with it. The golf-cape garment is one of general utility; it serves more purposes than any other waterproof garment; it is suited for town or country, land or sea; and it can be made up as attractively as anything else in the trade. I hear, too, that it is 'going out,' but our experience is all the other way."

The rapid supplanting of imported waterproof materials by American products was referred to at length in the last INDIA RUBBER WORLD. It is possible that an equal degree of independence will be reached by the American people with regard to styles of garments. No doubt the fact that the Duke of Marlborough ordered his wedding-suit from a New York tailor will be worked into many an advertisement to induce buying at home by those who have hitherto considered not only foreign styles but foreign makes indispensable to correct dressing. "We make our own styles in mackintoshes," said the man in charge of this business in one house. "I go abroad myself every year, and see what is new in London and Paris and Vienna, but I wouldn't think of offering garments to our customers simply because they find favor abroad. We are all the time open to new ideas, but it is not sufficient to say to the ladies of New York: 'This is what you want, because it is popular in Paris or Vienna.' On the contrary, we study whatever is new abroad, and adopt, with or without modifications, what we think will please the class of patrons who buy in our store. But we have an exclusive trade, and we are catering to only a limited territory and not to the whole country. If we were in Chicago we should find something different demanded, and still other changes would be necessary to please the people of San Francisco. Even here there are differences in the trade. All our goods are made up by one firm, who also make garments for other large stores in the city, and the requirements in the different places vary so that there is really no competition between us."

As for prices, the manufacturers of mackintoshes have not escaped the condition complained of throughout the rubber trade before the era of successful advances in the boot-and-shoe branch. The firms which are able to report the largest volume of trade for the year past have their satisfaction marred by the low prices which have prevailed. There has been much study over the problem of how to obtain advances, but, so far, without results. As one manufacturer said: "I don't believe that any improvement will be possible until the existing stocks of goods have been completely worked off. Crude rubber may advance from 60 cents to 80 cents per pound, and other materials in proportion, but we cannot charge a cent more for our products in consequence. We have tried to gain the coöperation of those who place our goods in the hands of consumers, but more courage than any of them possess is needed to take the first step in advancing prices. Our English competitors send over here an order to their agents that after a certain date a certain advance in prices must be charged, and there is no appeal from their ultimatum. But we can't do things just that way in America. If we should insist, on the first of January next, upon a fixed rate of advance in our prices, every competing house in the market would be ready to gain all the advantage possible from discounting our new prices. So we go on, selling a great volume of goods, making profits almost infinitesimal compared with those of the 'good times' of a few years ago."

---

THE production of rubber footwear in the United States last year is estimated by a writer in the Boston *Commercial Bulletin* to have been worth $30,000,000. The consumption of India-rubber by the bicycle-manufacturers for 1895-96 is estimated by the same writer at 800 tons.

## PROFESSOR DE VOE PREDICTS A RUBBER WINTER.

TO THE EDITOR OF THE INDIA RUBBER WORLD: In reply to your question as to whether the coming winter is to be a severe one, I want to say, yes, it will without doubt be one of the coldest winters on record. I make this assertion because of the astronomical conditions which I will not explain at length, as my understanding is that you wish simply to consider results rather than methods. I suppose the readers of THE INDIA RUBBER WORLD are very much more interested to know about the amount of snow, rather than the amount of cold, and I wish to say right here that the coming winter will be very much like the winter of 1873. It will be an exceedingly stormy season, and there will be a great deal of both rain and snow. A curious feature will be that every storm will clear away cold. There will also be frequent rains, and many times the rain will turn into snow and then freeze so that it will make very icy walking. The winter will set in first in the Northwestern states and some time before this letter is published, say about the 20th of October. I expect to see a heavy snow storm extend over all the Northwestern states about that time and they are likely to have sleighing in all states north of Kansas and west of the Mississippi followed by extensive cold weather by the 25th. That snow is not likely to leave the ground for four months or more. Snow will reach the New England states and the ground is likely to be covered by the last week in October. November will enter with winter weather over the whole country with snow to cover the ground from the Atlantic coast to the Rocky Mountains. The coming November is likely to be one of the coldest on record and will develop two very heavy snow storms; the first one will move up the Atlantic coast about the 10th and heavy storms are likely to come over the Middle, Atlantic and New England states between the 10th and 13th with very cold weather. The second snow storm will occur between the 15th and 20th. This storm will move down from the Northwest and will be particularly severe over the Lakes about the 17th. It will be a regular January blizzard through the Western states and snow will fall from Texas to Canada with intense cold weather. If one looks carefully at the astronomical conditions for December it will be found that they are almost exactly the same as for November, therefore the former month will be an extremely cold one. The severest snow storm in the month will occur between the 16th and 20th. Further than that a severe blizzard will extend over all the Northern states and will go as far south as the Western Gulf states. This snow storm will be followed by a severe cold wave. It is safe to count on both sleighing and skating for Christmas over all the states north of latitude 38. January, 1896, is to be ushered in with a severe snow storm and the second snow storm of this month will occur between the 15th and 20th. It will therefore be seen that the weather for November, December and January will be very much alike. In February will come the deepest snow of the season. As you wanted but a general statement of what the weather will be I will only say that this winter is to be a very severe one both in the United States and Europe and that the heaviest storms of the year will occur in the last weeks of January and February.

A. J. DE VOE,
Meteorologist.

Zingsem, N. J., Oct. 12, 1895.

[PROFESSOR DE VOE has for years past given local predictions for New York and vicinity and indeed for various parts of the country with surprising accuracy. He first came into notice about 1880 when he predicted an open winter with no ice or snow and was conspicuously right. He also predicted the great cyclone in Charleston, S. C., August 25th, 1886, and the blizzard at New York, March 12, 1888, as well as other predictions that have been wonderfully accurate. We have asked him to predict the weather for the coming season as we felt that what he said would be of interest to both rubber shoe men and mackintosh manufacturers.—THE EDITOR.]

## FACTS ABOUT RUBBER TILING.

TO THE EDITOR OF THE INDIA RUBBER WORLD: I have been much interested in a recent article of yours on rubber tiling and venture to add something to it. As a matter of fact rubber tiling has really come into competition with the original stone and clay tiling, and is actually in many places forcing the latter out of the market. It would be seen at once that for steam-ships of all descriptions where there is a continuous straining of the joints, stone is liable to crack or be forced up, as it has no yielding qualities, while the rubber tile expands and contracts when needed and does not get out of place. A case of interest is that of the ferry boat *Washington* of the Pennsylvania Railroad. At first its cabins were laid with what is known as scrap marble tiling which is very pretty. This was laid in stone cement and as a consequence cracked clear across the whole width and at last was forced up. The road then tried rubber tiling at the entrance to the upper cabins which has been down now for six months and looks even better than when first laid. The rubber tiling to be first-class should be soft and yielding to the feet as otherwise it is apt to be very slippery when wet and therefore dangerous. There are several methods of making rubber tiling in this country, the principal being the interlocking pattern already described in your journal. By this method the stock is calendered to the thickness required, and then punched out while unvulcanized, put in molds and each block vulcanized separately, so that it interlocks or dove-tails with a similar one. With this type of tiling it is unnecessary that it should be laid in cement which makes it much cheaper. A curious thing is that no matter what the strain, it never springs up.

Another form, and that used generally by rubber tiling manufacturers is that of punching out of the unvulcanized sheet of gum, and then molding each block. After vulcanization they are run through a buffing machine and both face and back buffed off thus giving a perfectly smooth surface and even thickness. These blocks are then laid down in a bed of Pará cement, which, when dried, holds them firmly so that it is almost impossible to take them up, part of the floor coming up with the rubber when force was used. Still another method, and one that has the claim of originality, is that employed by one concern in this country of having a sheet of each colored gum to be used calendered and then to press each one of these sheets in perfectly cool plates, thus insuring the exact thickness of each color, and causing air blisters to show on the surface where they are easily pricked. This sheet is then punched out as all other tiling is, but the blocks are not molded. Instead of this a heavy piece of duck is stretched on a table, each block is thoroughly cleansed with naphtha and then laid on the duck, after which it is stitched down and vulcanized in the piece. This method is protected by a caveat and will in a short time be patented.

W. C. LEVERSON.

Passaic, N. J., Oct. 7, 1895.

IT is said that a good cement for bicycle tires is made from 2 pounds of asphalt and 1 pound of Gutta-percha the ingredients being melted together and applied hot.

# NEW GOODS AND SPECIALTIES.

IT may not be known to the trade generally that the Cobb Vulcanite Co. of Wilmington, Delaware, have a department for the manufacture of mechanical rubber goods. This is in charge of a well-known superintendent, Mr. William H. Aldridge. The new specialty that they are to push this season is garden hose in 500 feet lengths. This hose is a radical departure from anything to-day on the market, the outside surface being as smooth as if molded, indeed smoother, as there is not even a bead mark upon it. This will be a decided advantage in that the hose will be so much more easily cleansed and it is said to have better wearing qualities. The company have also other specialties that will shortly be announced.

## M. & W. RUBBER TOE-CLIP.

BICYCLISTS have been heard to complain that the ordinary toe-clip is too short, and that the rider's foot is put to too great a strain in using it on the upward movement. Wheelmen, and especially racing men, have experimented with rubber bands of various widths, but the trouble has been experienced that they

have not been readily adjustable. The important tire-manufacturing company of Morgan & Wright (Chicago, Ill.) have addressed themselves to the production of a rubber toe-clip to meet all the requirements of the bicycler, and the result is indicated in the illustration herewith. Some of the features which they have considered essential are strength, durability, lightness, and constant readiness for use without special adjustment. The "M. & W." clip is offered to the trade as meeting these requirements. The retail price at the factory is 25 cents.

## THE GARLOCK HIGH PRESSURE PACKING.

THE Garlock Company's packings are so well known that their latest venture will be warmly received. It is made of selected fiber and metal, in combination with the Garlock packing compound so well known throughout the country. This

packing is especially adapted to high pressure work and is so constructed as to ensure long service. It is made in 16th and 8th sizes from ¼ inch to 2 inches square. Manufactured by the Garlock Packing Co., Palmyra, N. Y.

## A NEW IDEA IN GARDEN HOSE.

THE New Jersey Car Spring & Rubber Co. have a new idea in garden hose which all those who have examined say is a sure seller. A later issue of THE INDIA RUBBER WORLD will contain a descirption of it.

## THE "QUICK AS A WINK" HOSE COUPLING.

THE three illustrations accompanying this show pretty plainly an excellent type of hose coupling. The coupling itself is simple in construction, has no delicate parts to get out of or-

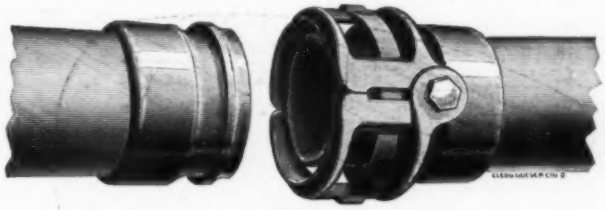


FIG. 1.

der and will stand rough usage and severe strain. It has now been in actual use, not only by fire departments, but in private use on lawn hose for more than a year and has been subjected to the most severe tests without any indication of failure. The first illustration shows the coupling all ready to connect. To effect a connection the two parts are brought together and the head of that on the left will force the clamping jaws outward in opposite directions against the tension of the spring. The

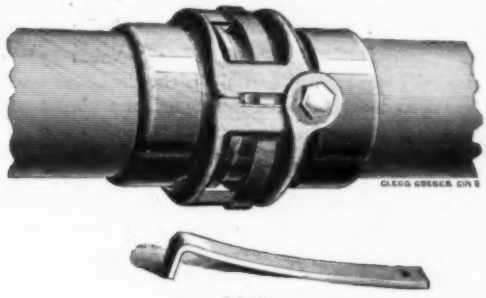


FIG. 2.

moment the grooved portion is opposite the outer ends of the jaws they will close around the head, and the inwardly projecting edges of the outer ends of the jaws will engage with the shoulder groove and it will be securely coupled. The connection is made water tight by means of the rubber tube shown inside of the jaws attached to the portion on the right. Figure 2 shows the coupling in place as applied to two lengths of hose.

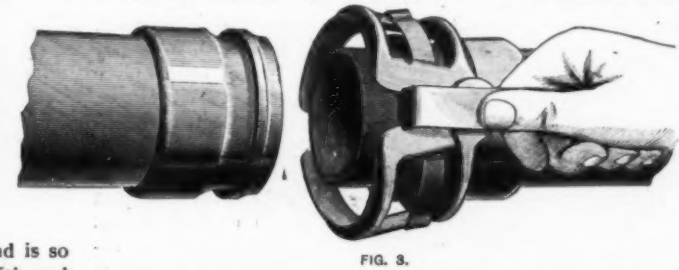


FIG. 3.

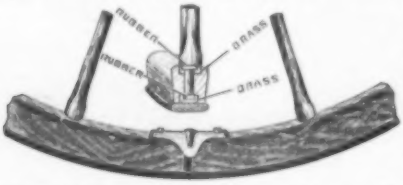
Figure 3 shows the method of disconnecting which is simply to take a flat key and place it in the slot between the two jaws. In regard to garden hose it is so simple that it has been well said it is only child's play to hitch on the water supply or to put on nozzle or sprinkler. As a matter of fact there is no trouble about leaky joints with this arrangement, and any one can couple or uncouple hose by this method in a moment. Manufactured by W. J. Clark & Co., Salem, Ohio.

## THE PARANITE FABRIC TIRE.

FOR the last year or two bicycle riders have, as a rule, had a decided leaning towards single tube tires. One of these that is woven of a special fabric to particularly meet this growing demand is the Paranite. This was brought out after careful testing during the season of '95 and it is said that it is one of the best cemented tires known. The fabric in it is of a special weave and is made in the factory of the tire manufacturers from selected long fibre cotton. Not only is the thread selected, but the weave is so controlled that the threads are placed properly to secure the greatest resiliency and life, consistent with the proper hold on the rim, and by these means a tire is secured that is light, strong and resilient. Another point of particular excellence about this fabric, is that by its particular weave it distributes the strains on all the threads equally and prevents the bursting or cracking so common in pneumatic tires. The process by which this fabric is made is covered by letters patent. The Paranite tire is made either single or double tube and is manufactured by the Indiana Rubber and Insulated Wire Co., Marion, Ind.


## A RUBBER-EQUIPPED WHEEL.

THIS application of rubber is a radical departure from the usual methods. In it there is no need of revamping the outside tire nor is there any attempt to use a pneumatic tire. Instead of that, high-grade rubber cushions which are entirely protected from wear and are kept in place as fixtures, are used. It has been said by carriage makers that the rubber is in exactly the right place for the reason that there is no possibility of suction from the tire to add to the draught on the horse. With this arrangement one set of rubber cushions will outlast three sets of steel tires. In point of first cost it is less than any other method, and its durability is far beyond that of the ordinary tires. Referring to the illustration it will be seen that there are elastic cushions at all points of contact between the rim and the spokes, and they are so confined that the sound is neutralized, the impact softened, thereby securing a comfortable cradle-like motion not to be described and yet accelerating the forward movement. It lightens the draught on the horse and there is no body of rubber to flatten under the weight of the vehicle as in the ordinary rubber tire. Manufactured by A. McIntosh Williamson, No. 2204 Fitzwater street, Philadelphia, Pa.




## MAXON'S VULCANIZED-ON PATCH.

THE idea of vulcanizing a patch on a tire as far as known has never been done successfully except by Mr. F. W. Maxon. In order to have the work done properly the tires are sent to the factory where they are first cleansed with naphtha and the puncture then covered with a piece of unvulcanized gum a little larger than the rent in the tire. Over this is laid a piece of canvas that the patch may be made stronger. Then on the inside of the tire is placed an iron core. The tire itself is then placed in a mold of the proper size, and put in a vulcanizing press where the patch is slowly vulcanized so as not to injure the rest of the tire. When the patch to be put on is not opposite the lacings a small slit is made in the tire on the side that comes next to the rim, and this rent is afterward closed up with a patch or laced. The manufacturers have sent us a sample of tire repaired by this method and it is certainly an exceedingly pretty piece of work. This work is done by F. W. Maxon, 24 Exchange street, Rochester, N. Y.

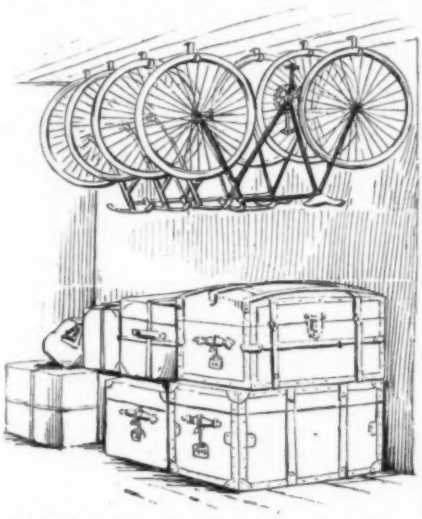

## A PNEUMATIC TIRED MOTOR WAGON.

THE illustration shows a vehicle which, it is claimed, is to have a most interesting future. It traverses at the will of its operator all roads adapted to ordinary traffic and at a speed exceeding that of horses. It is much more manageable than the horse and freer from danger. It runs backward as easily as forward and stops or starts at will. In practical use, ten minutes stop every half day to be charged and it is ready to go ahead again. Its speed depends largely on the road; on one in good condition a speed of 15 miles an hour is easily maintained. Its driving force is a 4 to 6 horse power gasoline motor and it

weighs less than half as much as similar vehicles heretofore built. It steers like a bicycle and just as easily. The cost of running is less than half a cent a mile, and it is said that there are no offensive odors connected with it, no care is needed when not in use and very little at any time. These motor vehicles use pneumatic tires and are manufactured by the Duryea Motor Wagon Co., Springfield, Mass. The illustration is kindly furnished by the *L. A. W. Bulletin*.

## RUBBER-COVERED CYCLE-HANGERS.

THE problem of transporting bicycles is one that has attracted many minds and is so far unsolved, unless the scheme shown in the accompanying illustration is proved as feasible as it looks. The idea here is to have attached to the ceiling of the baggage car a series of hooks, each covered with rubber and arranged at convenient distances from each other. The bicycle is turned upside down and hung by the rims of the two wheels upon two hooks. Thus, it is placed out of the way and is free from danger. There is this to be said about the contrivance, it is certainly cheap and it looks most practical. Further than this, it is the suggestion of the practical brain of a practical man, Mr. Sterling Elliott, chief consul of the L. A.W We are indebted to the *Referee* for the illustration.



## CORK TREAD PNEUMATIC TIRE.

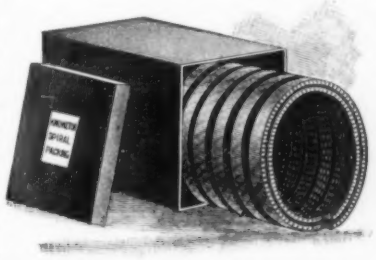
A GREAT variety of appliances have been gotten up to render a pneumatic tire punctureless. One of the simplest and what is said to be the most effective is called the cork tread. The tire contains a pocket 1¼ inches wide and ⅜ inch thick into which is vulcanized a strip of cork which passes all around the inner circumference of the tread. The air cushion is above this and the wheel rim, so that there is really plenty of resiliency. It is said that this tire is particularly applicable for wheels run by mail carriers or on pneumatic parcel carriers that are getting so popular now in cities, for the reason that there is no danger of a puncture, and they run with the greatest ease. The tire is the invention of S. F. Clouser, Brooklyn, N. Y., and is manufactured by the Manhattan Rubber Mfg. Co., 64 Cortlandt street, New York.

## A VENTILATING RUBBER INNERSOLE.

THE innersole here shown is so made that it will fit any shoe and has the following points to commend it to the user. The portion next to the foot is cloth covered so that the rubber is not near enough to be heating. Its under side is molded with scores of little projections that lift it from the sole of the shoe and each forms an individual cushion. Between these are perforations that allow the ingress and egress of air, thus keeping up a mild circulation at the sole of the foot. Manufactured by Alfred Hale, School street, Boston, Mass.


## THE KNOWLTON RING PACKING.

THIS packing is first of all a molded packing, and the inner part is so made that it runs on the ends of the fiber which is next to the rod and for that reason wears much longer. In the second place the rubber is put in next, and then the balance of the duck until the proper size is attained and the rubber being in the width makes the expansion toward the rod and box instead of being lengthwise, which is found to be much better. Put in this way it is always tight and users are never troubled with leaks. It is above all a high pressure packing and the manufacturers claim that it is the best for marine work that can be obtained.

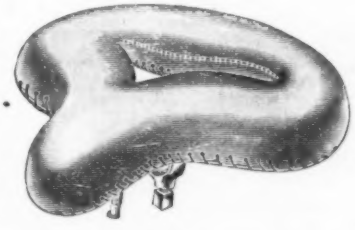


## A TIRE WITH A FLAT TREAD.

THE Armoured pneumatic tire, a tire that has been subject to experiments for over a year, is expected to do away with all puncturing. The tread of the tire is perfectly flat and remains so after being inflated and ready for the road. Its outside is composed of a puncture proof strip in which a piece of watch-spring steel, the width of the tire is vulcanized in place, the strip itself being cemented on the tire. In case this strip should wear out, others can be put on at small cost. The manufacturers claim great things for it; for instance, that it is as resilient as any tire; that it rides over muddy roads, or over sand, with much less effort than the ordinary tire, and that it does not throw mud. It is said to be especially good for riding over rough roads. The road tire will weigh 4½ pounds. Manufactured by the Armoured Pneumatic Tire Co., Buffalo, N. Y.

## THE CUTTING PNEUMATIC SADDLE.

THERE have been so many types of pneumatic saddles made that are not wholly satisfactory, that it is exceedingly agreeable to find one made by a rubber concern and guaranteed by them that exactly fills the bill. The Cutting saddle is exceedingly simple, the illustration showing its shape exactly. Its principle is very much like an inner tube tire—there is an inner tube of a fine grade of rubber which is surrounded by an outer covering of soft leather. The saddle can be inflated so that almost every bit of the jar can be taken from the wheel and in connection with the pneumatic tire makes riding fifty per cent. easier. The same style is made for ladies and gentlemen. It is manufactured by the Peerless Rubber Mfg. Co., 16 Warren street, New York, who are the General Sales Agents for it.



## THE TRAVIS REVOLVING LAWN SPRINKLER.

THE exceedingly strong point about this sprinkler is that it is rotary and that too without a rotary water joint. It is unique in that respect and is said to be the only one ever made that

can make that claim. It cannot wear out, and as there are no water joints it is easily seen that they cannot clog. It will distribute water over an area 75 feet in diameter with 50 pounds water pressure and do it evenly; not in big drops but in spray.

It can be run with almost any water pressure, rotating freely with but 6 pounds. It can be drawn around the lawn while in action. By the use of the Travis water method a fine mist or a heavy spray can be secured by simply turning the little thumb screw at the top either way. By this method the water is allowed full volume until it strikes the point of discharge when it is pinched for the briefest possible space. The mechanism is simple, cannot get out of order, the parts cannot get loose or give way, and the delivery can be regulated for a large or small lawn, or for any kind of spray or mist. Manufactured by the W. S. Nott Co., Minneapolis, Minn.

## A FOUR-WAY SIAMESE.

ONE of the interesting and useful things in connection with fire-hose is what is known as the four way Siamese. The connection is a single line of 3½ inch leading hose. From the four

deliveries emerge four 2½ inch streams, thus enabling a department to throw four different streams from one lead which is used very successfully in large cities. The force of the stream is sufficient to tear down a brick wall. This is manufactured by W. D. Allen & Co., 151 Lake street, Chicago, Ill.

## A PNEUMATIC-TIRE ARMOR.

THE latest device for protecting pneumatic tires from puncture involves the construction of a rubber tube of which the outer edge (*i. e.*, that coming in contact with the road) is double, and the insertion between the two thicknesses of rubber of a strip of specially prepared rubber cloth. The idea is that any ordinary puncture will extend only through the outer rubber, the toughness of the inserted strip preventing any harm to the inner wall of the tire, thus keeping the air-chamber intact. To lessen any possible stiffness resulting from this peculiar construction of the tire, the inserted strip is encased in cotton, which renders the whole more yielding. This new device has been applied successfully both to hose pipe tires and to the "shoe" of double tube tires. The patentees of the new tire-armor are S. Milford Schindel, of Hagerstown, Md., and H. C. Williams, of Heightstown, N. J. They have made a contract for its manufacture by the North American Rubber Co. (Setauket, L. I.) and its exclusive use in the single- and double-tube tires of that firm. The Setauket people report the sale already of a good many tires including the new feature.

## NEW TRADE PUBLICATIONS.

[*These Catalogues can be obtained free on application to the manufacturers issuing them.*]

OWNERS of heavy machinery are likely to find something of interest in the latest illustrated catalogue of the Magnolia Metal Co. (No. 74 Cortlandt street, New York), containing particulars with regard to their "Magnolia" anti friction metal for journal bearings. Part of this handsomely-printed pamphlet is devoted to scientific tests of the qualities of Magnolia metal in comparison with competing articles in the trade, in connection with which are several photo-engravings showing the effects of wear upon Magnolia metal and upon journal-bearings of other metals for a similar length of time. The result of all this is to show the great excellence of the former. Several pages are filled with extracts from engineers and mill-superintendents commending Magnolia metal after having used it successfully. In the certificate of award at the World's Columbian Exposition this metal was stated to possess the advantages of not cutting or heating journals, of durability, of saving a large percentage of oil, of requiring less motive power than other journal-bearings, and of superiority for submerged bearings. The increase of sales is stated to have been continuous since the introduction of the Magnolia metal, in 1886. Rubber-mills are enumerated among the establishments for which Magnolia metal is recommended by its manufacturers.

=A new pamphlet has been issued by the Jos. Dixon Crucible Co. (Jersey City, N. J.), in relation to "Dixon's Pure Flake Graphite." This is a substance of interest to engineers, since experience has shown the economy in its use through the saving of oil and, consequently, of dollars. It is pointed out, by the way, that there is a wide difference between pure flake graphite and the ordinary plumbago, and blacklead so often used for lubricating purposes. The pamphlet tells what "The Boys"—meaning engineers who have have tried Dixon's graphite—have to say about it.

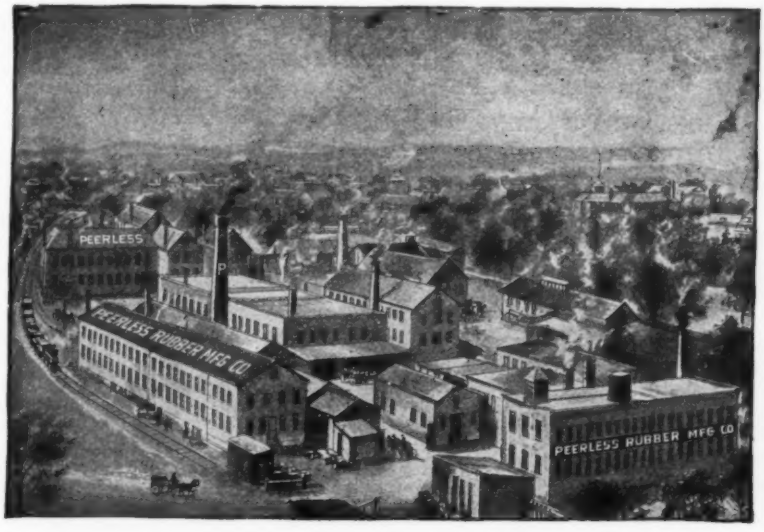
=The Diamond Rubber Co. (Akron, Ohio) have sent out their tire catalogue for 1896, and it is a most interesting publication, if only for the reason that, although their business was founded so recently as 1894, they have already taken rank among the really important tire-manufacturing concerns of the country. In this catalogue buyers will find a wide range of tires listed—from the delicate racer to the heavy roadster. The "Diamond" tires for 1896 avoid extremes of lightness, and all of them are made in different diameters, up to 1¼ inches. The company seem disposed to be more firm with regard to tire guarantees than tire-manufacturers generally have been. The "Diamond" tire-repair outfit is an extensive one and is fully described. The catalogue closes with a telegraphic cipher code for the convenience of customers in ordering.

## THE HOME OF THE RAINBOW.

THE town of New Durham, N. J., is well called the home of the Rainbow for it is there that the famous Rainbow Packing was first conceived and is made now in astonishing quantities. A visit to the plant where this and other well-known rubber specialties are made is of great interest and THE INDIA RUBBER WORLD man felt himself fortunate in securing permission to do so. The buildings are all of brick, and equipped with electric lights, Vogel sprinklers and every convenience that a rubber factory can desire. Nor are necessities alone considered for in an open court is a green house where are flourishing a variety of thrifty plants and flowers.

Speaking of the Rainbow Packing a separate two story brick building is set apart for it. This mill has its own compounding room, washer, five mixing mills and a three roll calender. The casual visitor does not learn the well-guarded secret of the Rainbow composition by this visit, all he knows is that a red compound is mixed and calendered in his presence and that a fine quality of rubber is used.

The other goods are made in the factory proper where are two large washers, 5 mixing mills, 5 vulcanizers, 18 steam presses, besides a special type of hydraulic heat press used for the manufacture of combination matting. This press by the way is arranged to mold 500 different patterns of this matting by an ingenious interchange of die blocks. In addition to this is a new hydraulic belt press built by the Farrel Foundry & Machine Co. The sources of power for the factory are two Watts Campbell engines of 120 h. p. each.




A point of interest regarding the factory is its fire equipment. In addition to the sprinkler system already mentioned, there is a well organized fire department among the employés. Water is supplied from the city mains and there is also a 60,000 gallon ground tank and a 10,000 gallon elevated tank both of which are kept full by pumps that work automatically. There are also large Worthington fire pumps ready for instant service.

The plant at present consists of the following: a one story building 300×32 ft., a two story 200×30 ft., a two story 75×45 ft,. a two story 58×32 ft., a one story 50×18 ft. In addition there is a handsome brick stable for the factory teams, a machine shop, carpenter shop, etc. Further than this the company have lately purchased all of the land lying between their plant and the railroad and are about to erect thereon a two story brick building 286×40 ft. The specialties made in the general plant are, the Eclipse gaskets, the Wagner and Pullman diaphragms, Pullman mats, Peerless piston packing, Eclipse air brake hose, stop bags for gas mains, steel clad hose, anaconda hose, combination matting, rubber oil cans, etc., etc.

The factory is superintended by Mr. E. L. Perry, one of the veteran rubber men to the country, and the marketing of the goods is done from the New York store, 16 Warren street, under the able administration of Mr. C. H. Dale, the Pres't. and Gen'l Mgr.

## OBITUARY.

JOSEPH B. LINCOLN, who died in Boston on October 21, was the head of the largest boot-and-shoe firm in the United States, in which capacity he long had been an extensive jobber of rubber footwear. His firm was known as Batchelder & Lincoln, but since the death of E. B. Batchelder, in 1878, Mr. Lincoln had been sole owner of the business. He was born on a farm in North Cohasset, Mass., on July 3, 1856, received a common school education, entered a shoe-store in Boston at the age of seventeen, opened a shoe-store of his own four years later, and in time became a member of the old firm of G. A. Mansfield & Co. Out of this grew the firm of Batchelder & Lincoln. Mr. Lincoln was truly a leader in the trade, being a man of broad ideas, fine executive ability, and the strictest integrity. He was an early and active member of the Boston Boot and Shoe Club, and was a member of many social organizations. The funeral was at Hingham, Mass., on October 23, where the ritual of the Knights Templar was recited and the pall-bearers were members of the Masonic bodies of which Mr. Lincoln had been a member. During the time of the funeral all the wholesale shoe houses in Boston, including the offices of the Boston Rubber Shoe Co., were closed. Mr. Lincoln is survived by a widow but by no children.

* * *

HORATIO GATES KNIGHT died at Easthampton, Mass., on October 16, in his seventy-ninth year. He was during the whole of his life, after reaching manhood, an important man of affairs in his town and in the state as well, and identified with the success of many industrial enterprises. He was connected with the late Edmund H. Sawyer in the organization of the Glendale Elastic Fabrics Co., and the Easthampton Rubber Thread Co., and was for some time president of the latter.

* * *

JOSEPH BIDMEAD, for the last fifteen years superintendent of the Bridgeport (Conn.) Elastic Web Co. and a large stockholder in that concern, died on October 26 at the age of fifty-four years. He was a native of England, and for sometime prior to coming to Bridgeport had charge of a factory in Canada. He was recognized as a man of ability in his department, and the employés at the factory have given expression to a warm feeling of attachment to their late superintendent.

A SIGN on an uptown bicycle school in New York reads: "Tires blown up without pain. Wind free."

# CABLE-LAYING IN THE VICINITY OF NEW YORK.

THE great successes won in ocean telegraphy have somewhat cast into the shade the business of building short cables for shallow water, which, at the beginning, comprised the whole submarine-cable industry. But these minor cables amount still to no small feature of this industry, since orders for ocean cables are only of occasional occurrence. While no ocean cable has yet been manufactured in the United States, four large companies in this country are engaged in making submarine cables to an extent which forms an important item in their business. The demand for wires which could be submerged in water was contemporaneous with the earliest use of the electric telegraph; else the transmission of news would have been interrupted on the approach to every river.

Not long after the discovery of Gutta-percha it was tried in the insulation of underground telegraph-wires in the city of London, with such success that its use was soon extended under water, so that the Dover-Calais cable, completed in 1851, was insulated with this material. So rapid was the spread of the new idea that the Ohio river, two years later, was crossed at two points by submarine cables. The laying of telegraphic cables across rivers has since constantly increased, until they are now to be found in every navigable stream in the country, to say nothing of the shallow-water lines abroad. But Gutta-percha, when used for this class of work, is open to the objection that the land-ends, if exposed to the sun, will deteriorate. Besides, a steady demand for a cheaper material has always existed. Not a little experimenting has been done with India-rubber, but practice has settled upon certain patented compounds, based upon rubber, as affording the most satisfactory insulation, all things considered. When the United States government gives an order for submarine cables, as for telegraphing weather observations from out-of-the-way points, Gutta-percha is always specified, but the telegraph and telephone companies are satisfied with and even prefer one or another of the rubber compounds referred to.

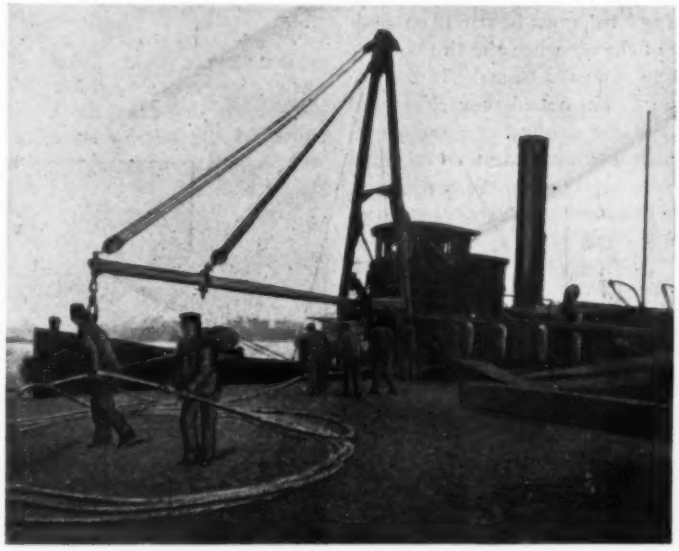
CABLE-LAYING TUG "WESTERN UNION."
[Showing Cable Coiled on the Front of the Boat.]

The use of telephone cables, by the way, since the introduction of the long-distance system, has grown so rapidly as to convince some of the cable-manufacturers that the telegraph is likely to sink to second place in importance for the transmission of messages. Already the capacity of the telephone cables leading from New York city—across the North river, the East river, and the Harlem—probably exceeds that of the telegraph cables, and they serve to form connections with Boston, Philadelphia, Pittsburgh, Buffalo, Chicago, and no end of smaller towns. A single insulated-wire firm some time ago reported that they had laid across the rivers surrounding New York city 108 cables, averaging ten conductors. Of these they had laid for telephone use fifty 7-conductor cables and six 10-conductor cables.

Just how many submarine cables are in use in the United States alone is a point upon which the manufacturers might not care to give definite figures. But they are strung between Philadelphia and Camden, across Hampton Roads at Norfolk, across the Mississippi at many points, and generally across the rivers of the country. In Canada, there are cables across the St Lawrence, and through the tunnel under the St. Clair. A cable was stretched across Long Island sound at one time, but it is not now in use. No cable has ever yet spanned any of the great lakes, for the reason that all of them can be surrounded by overland wires more cheaply. But there is a government cable 6½ miles long leading from Alpena, Mich., across an arm of the lake, in the service of the weather bureau. These references are all to cables for telegraph and telephone use, but they do not exhaust the list. For instance, insulated wires are used in lighting buoys at Sandy Hook and in New York harbor; some electric-lighting companies employ cables in extending their service across rivers; a cable 3000 feet long is used at Tacoma, Wash., to bring power under the bay to the city, and so on.

The frequency with which arrangements had to be made for laying cables across the North river led the Western Union Telegraph Co., a few years ago, to order the construction of a boat especially for this purpose. This has

been named the *Western Union*, and is a large twin-screw tug, fitted with every appliance for the work for which it is intended. Such an equipment might seem hardly necessary, in view of the short time—six or eight minutes—needed for a cable-laying voyage between Vesey or Barclay street and Jersey City. But a properly-constructed cable is a delicate and costly piece of work, and its usefulness may depend upon the care exercised in laying it down. Besides laying all the submarine cables leading from New York city, the *Western Union* is chartered frequently for similar work in neighboring waters. The tug is in command of Captain George T. Olmstead, while the work of laying the cables is in charge of A. Kline, one of the most experienced men living in this particular field.



CABLE-LAYING TUG "WESTERN UNION."
[Landing a Cable-end, to be run under the Docks.]

Two illustrations presented with this article are views of the *Western Union* engaged in laying a Kerite cable (manufactured by W. R. Brixey, Seymour, Conn.) in the North river. One shows the cable mounted on an upright reel on the forward deck of the steamer, from which it is paid out by its own weight through a pulley arrangement attached to the end of a big boom. The other shows the tug arriving with the last end of the cable, of which about 600 feet are to be laid under the docks, to form the land connection.

Cables laid from the foot of Vesey street, New York, to Jersey City must be 5300 feet in length. A cable laid between the foot of East Thirty-eighth street and Long Island City was 5000 feet long, 2¾ inches in diameter, and weighed 21½ tons. An important consideration in the maintenance of these cables is the risk which the companies owning them have to run in the likelihood of large ships breaking them. There is no legal redress for such damages, and the Western Union Telegraph Co. and the Metropolitan Telephone and Telegraph Co. have both suffered heavy losses, from time to time, in this respect. But should these powerful cables tear off a blade from a ship's propeller, the cable owners must make good the loss.

## INDIA-RUBBER IN THE TIRE INDUSTRY.

SOME rubber-man whose name is not given has figured out that the bicycle business has made a difference within eighteen months of probably $5,000,000 to the crude rubber trade, according to the New York *Sun*. Evidently what is meant is that the demand for tires from the wheel-makers during that time has absorbed rubber to the value named. Another item of his estimate is that from 1,000,000 to 1,500,000 pounds more of rubber were required by the bicycle trade in 1895 than in the preceding year. Just how many bicycles are made is a question as yet without an accurate answer. Representatives of several leading firms seem agreed, however, that the sales of 1895 wheels will reach 500,000, or very nearly as much, and they are further agreed that 1896 will witness an immense advance over these figures. Of course this will mean an additional draft upon the rubber supply. It is too early, however, for the rubber-manufacturers to feel the effect of the prospective increase in earnest, since the tire is about the last item of the bicycle to be put in place, and bicycle-makers have no reason to order tires for delivery before they are needed. While 500,000 seems to be the most generally-accepted estimate of this year's bicycle crop—meaning 1,000,000 tires—there is absolutely no intelligent estimate of the number of extra tires needed during a year for replacing punctured and faulty tires.

* * *

APROPOS of the attempt to popularize the pneumatic tire for vehicles, some interesting remarks were made by John Philipson, president of the British Institute of Carriage Manufacturers, at the opening of the eighth autumnal meeting of that body, at Tunbridge Wells, on August 20. After referring to the application of pneumatic tires to road carriages as a sign of the times worthy of consideration, he said :

"Since we had the pleasure of listening to Mr. Arthur du Cros's paper on the subject last year, much of that progress which he predicted has been accomplished. With the lighter type of carriage, such as the phæton, the small brougham, and the wagonette, the pneumatic tire is an accomplished fact. For some time past it has been used on good roads with perfect safety and success. The advantages of its general application would be manifold, for the noise and din of our busy streets would be much diminished, locomotion would be quicker and easier, the life of the carriage would be prolonged, and, what is of importance to our municipal authorities and county councils, the

pavements of our streets and roads would be more durable. Up to the present time, however, pneumatic tires have not been successfully applied to the wheels of heavy carriages. By a heavy carriage I mean one weighing more than 16 or 20 cwt. We require a material for the outside covering which, without being hard, must be strong enough to resist the great pressure of the air when the tire is subjected to a degree of inflation sufficient to make it carry a heavy load without flattening. The outside covering must be incapable of puncture, and the method of attachment to the rim must be such that it will not be broken from its fastenings under extreme pressure, or when the carriage is in motion. During the last three or four years much ingenuity has been expended upon the production of the air-valves of pneumatic tires. There has been great improvement in this apparatus, but there is room for more. We have not yet reached that degree of simplicity and efficiency necessary in the case of a piece of mechanism that may have to be manipulated at any moment, and by unskilled hands. When these conditions have been fulfilled, and I am glad to say that they appear to be within measurable distance of fulfilment, we will, I believe, see a very wide application of pneumatic tires, if not pneumatic wheels, to road carriages of all kinds."

A further suggestion of interest made by President Philipson related to the lessening of friction by the use of ball-bearings on roller axles, to which he thought that the carriage trade had not devoted enough attention. It had not yet been possible to employ them satisfactorily, he said, unless the wheels had either solid rubber or pneumatic tires, or unless there was an India-rubber collar between the axle-box and the nave. With the pneumatic tire all the advantages of the ball-bearing could be availed of, because the risk of breakage was minimized. Experiments made by the manager of the Paris Cab Co. had shown an advantage of from 37 to 47 per cent. in economy of draught through the employment of ball-bearings.

* * *

THE action brought against the Pneumatic Tyre Co., Limited, of Dublin, by the North British Rubber Co., Limited, of Edinburgh, of which notice was given in the August INDIA RUBBER WORLD, is aimed at the validity of the original Dunlop pneumatic-tire patent, the claims of which are very broad as respects the use of compressed air in tires. Very many companies on the other side, it is said, pay royalties to the Pneumatic Tyre Co., Limited, under their original patent, but the North British company have always refused the payment of any royalty. Last month the report became current that a settlement of this suit had been reached out of court, but this was an error. It may be said, indeed, to have been a direct invention, gotten up by speculators to affect the price of Dunlop shares in the stock market, for some very decided fluctuations in these shares followed the report. The case is not only still on the files of the court, but is likely to remain there for a long time. By the way, it may be mentioned that the claims of the original Dunlop patent granted in Great Britain, were so broad that they were allowed only in part when a patent was applied for at Washington.

## ALL AROUND A RUBBER SALESMAN.

ARTIST photographer Kemp of Trenton, N. J., is the owner of a camera that is furnished with a rotating stand which in a very few seconds takes one from a variety of points of view. In an unwary moment Mr. Robert B. Baird, of the New York Commercial Co., strayed in and was caught. The result as it appeared in the photographer's window is shown in the octograph, if we may coin a word. Mr. Baird is a modest man and prefers to talk crude rubber rather than to detail his own exploits. If our memory serves, however, he has been in the

rubber business about ten years, starting as cashier and bookkeeper with the New York and Boston Rubber Co., and acting as secretary when its successor, the New York and Boston India Rubber Co., went into liquidation. Later he went with the New York Commercial Co. and has a large line of customers among the manufacturers of rubber goods in and about New York. Mr. Baird is very popular with his trade and is so energetic that it is a wonder that the camera caught him at rest long enough to secure even one likeness.

## TENNIS-SHOES FOR 1896.

THE manufacture of tennis-shoes by the United States Rubber Co. will not be confined this season, as it was last year, to the National factories. As a feature of the new policy of concentration of work, it was thought that the tennis goods could be manufactured more economically at one plant than if scattered among the dozen factories in the combination, and the works at Bristol were selected for this purpose. The effect was to interfere somewhat with the other lines of production at Bristol, on account of which the orders for tennis goods hereafter will be divided between the National and Wales-Goodyear companies. Mr. E. H. Paine said to THE INDIA RUBBER WORLD that this was no indication of an expected increase in orders for tennis shoes; it is simply a change for the sake of convenience. The goods made at Naugatuck will be made in two grades—branded "Wales-Goodyear" and "Champion." Orders for these from territory contiguous to New York will be received by Mr. Paine, on Reade street, while the Boston trade will be handled by Chester J. Pike.

The Goodyear's India Rubber Glove Manufacturing Co. will also manufacture tennis-shoes again. President J. D. Vermeule reports that they made more of these goods last season than in the preceding year, and that they expect to enlarge their output still more for 1896. In his opinion a permanent demand for tennis goods may be looked for on account of popularity of these shoes in some of the Southern States.

## MACHINE-MADE HOLLOW GOODS.

THE manufacture of hollow rubber balls, bulbs, and similar goods, has always been a laborious and to a degree a costly process. It is enough to mention the steps in the process to make this too evident. After the calendering came the cutting into suitable shape by dies; the spreading on books or racks to keep them from sticking; the transportation to the table of the girls who do the seaming; the cementing of the edges: the drying of the cement; the careful joining of the edges together, and the inflating and closing of the final seam. Even with experienced workers the seams are not always perfect, and the imperfections were such that they showed as powder cracks or as leaks, after the goods were vulcanized, thus making them a total loss. The losses from defects of this kind are about eight per cent. in the most carefully regulated factories, and far more in others. A machine to do this work has often been talked about, but never been an actual accomplishment, for the reason that it presented what seemed to be mechanical impossibilities. The editor of THE INDIA RUBBER WORLD, however, was fortunate enough a day or two since to see a machine that solves the whole problem, and in a way so simple and complete that it is marvelous. The machine in question is so small that a man standing in front of it could easily touch any part of it. It was operated by a half-grown boy, who had a girl as a helper. It was at work on 2 1-2 inch hollow balls at the time of the visit. An endless belt fed two strips of unvulcanized rubber into it, while from it emerged a row of perfectly-formed balls, all inflated ready for the mold. The seam was not butted, nor was it lapped; it was actually calendered together, and so strong that the ball would part in any portion in preference to the seam. They were so smooth that a powder crack was an impossibility, and if by chance a pin hole appeared in the stock, or any damage was there that would show after vulcanization, the machine simply refused to finish such a ball, and turned it into scrap. Another marvelous thing about this mechanism was that a ball being cut open was found to have the same thickness of wall in all parts. In other words the rubber had expanded with perfect evenness in all portions during the making. The output from this one machine is over 20 a minute, or 12,000 a day, of 2½-inch balls, and it could easily be made much more if need be. The machine can readily be changed to make any size from 1-inch to 5-inch balls. The loss from imperfections by this method is less than two per cent. The new machine is adapted to make all kinds of hollow goods in rubber, and it is but a question of time before hand work in such articles will be a thing of the past. This wonderful mechanism is the invention of Mr. H. G. Wolcott of Fishkill, New York, who together with Mr. J. P. Rider, Vice-President of the New York Rubber Co., has worked long for its accomplishment. It is now running at the works of the company at Matteawan, N. Y., and may well be called one of the notable triumphs of American ingenuity. As the patent papers have not yet been issued for the protection of its mechanical construction, we have not the privilege of giving our readers a description of the machine at this time, and can only refer to its wonderful work.

## EXTENSION OF THE HODGMAN FACTORIES.

THE gradual extension of a long-established manufacturing plant, enjoying a reputation for successful business management, is a safer indication of industrial progress than the rapid growth of a company which has not had time to gain experience or to establish a reputation for business sagacity. In the former case it is much less probable that useless expenditures will be made for an increase of capacity. These thoughts are suggested by the improvements lately completed in the plant of the Hodgman Rubber Co., at Tuckahoe, N. Y., which dates back to 1853. The Hodgman business, by the way, is still older than this, by fifteen years. The nature of the improvements consists both in additional capacity and in the replacing of a part of the plant with new and better types of machinery, to the end that a larger output may be secured, under more economical conditions than hitherto. The work referred to has been carried on during the recent period of comparative dullness in business, and the plant is now in such a condition that all the energies of the company can be devoted to meeting the increased demand for goods which they have confidently expected in connection with the general revival of trade.

The additions to the plant at Tuckahoe include a 350-horse-power Corliss tandem-compound engine, 15 and 28×48 inches, with air-pump and condenser; a grinder with 60-inch rollers, 20 and 22 inches in diameter; a new three-roll calender, 18×48 inches; and two new washers. A new line of very heavy shafting runs this new machinery plant, which is an addition to the former plant of the company, and was made by the Farrell Foundry and Machine Co. This new line of shafting is run by a rubber belt from the engine-shaft, the belt being 36 inches in width and 100 feet long, seven-ply, and built expressly for this plant by the Boston Belting Co. This belt runs on two pulleys, 10 feet in diameter, with 38-inch face, and weighing respectively 10,000 and 15,000 pounds. The principal addition to the buildings this year is a three-story structure, 50 feet wide by 200 feet in length, made necessary by the increased demand for the company's line of druggists' sundries.

The name of Hodgman is so intimately connected in the public mind with their excellent line of mackintoshes that it may be news, even to some rubber-men, that the Hodgman factories are employed, to the extent of one half of their capacity, on other goods than waterproof clothing. In fact, they manufacture as wide a range of goods as any other concern in the trade, if not wider. They are extensive manufacturers of rubber bands and produce a varied line of druggists' sundries, while footballs and certain other items of sporting goods receive a full share of attention in this factory. A large output of rubber sheeting is also to be specially mentioned. Finally, they fill many orders for specialties, much of their work being unique. An example is a rubber tank made some time ago for a theatrical company and successfully exhibited on the stage in New York city and elsewhere. It was 60×24 feet in size and of varying depth, up to eight feet. When filled with water it floated a good-sized naphtha launch. While this may be said to have been merely an amplification of their rubber bath-tubs, it was no common piece of work. Yet its production was not regarded as difficult in a plant so well equipped and by workmen so well trained as those of the Hodgman Rubber Co.

THE Boston Belting Co. have a fine exhibit of mechanical rubber goods at the Atlanta fair.

## HEARD AND SEEN IN THE TRADE.

I HAVE heard a good deal about the frequency with which rubber-manufacturers and dealers in rubber goods are asked by business friends or employés, by firemen, by policemen, and a host of other people to buy tickets for balls or picnics, or to take advertising space in programs of different sorts of entertainments—all of which involve the giving of money for which no equivalent is received, although the plea always is that the rubber-man who is liberal in such matters will profit from the influence of the solicitors in the sale of his goods in future. Conversely, it might be asked whether the rubber-man who refuses to advertise in the program of a picnic will find the influence of its managers exerted against him—but this suggestion would give a color of blackmail to the whole business. I have not heard—although it may be so—that dry-goods dealers or druggists or feather-workers are approached for help in quite the same way. The idea seems prevalent that the rubber trade is a peculiar one, depending largely upon the sale of goods by contract, and that the rubber-man can be caught by talk about "influence" in his behalf when contracts are to be made. So steam-engineers and mill-superintendents and employés of lower degree let it be understood, from the promoters of their excursions or picnics, or from representatives of their societies, that, if they are sufficiently helped with cash, they will "remember" the contributors when their employers next want to buy belting, hose, or the like. After hearing several complaints from members of the trade of annoyances from this source, I mentioned the subject to the treasurer of a mechanical-goods company, who is by no means new to the business.

"This sort of thing used to annoy us," said he, "but it no longer does so. We have learned that the promoters of the schemes you mention are seldom or never in a position to help us any, even if they should try. As for their advertising mediums—when their demands for money take this form—they are not likely to fall into the hands of buyers of goods. If we want to contribute to the pleasure of a picnic or excursion party, we do so with no idea of being financially benefited. But I don't see the need of discussing this question in print. If a man who is any sort of a business man doesn't think that it would pay him to buy tickets or to pay for space in a program, he ought to say so, and that would settle the matter."

* * *

THERE was a convention of fire-department officials lately at Augusta, Ga., and I asked a rubber-manufacturer for his views with regard to making exhibits in connection with such meetings. "Exhibits of goods are profitable," he replied, "only when they are made judiciously. We declined an invitation to display our goods at Augusta, for the reason that, while we make and sell fire-hose, we are devoting less attention to it than to some other branches of our trade. The fire-hose business, more than any other of which I know, must be pushed constantly and vigorously to make it pay. If we had been more largely interested in this line, we should have made an exhibit at the firemen's convention; just as we are annually represented with a line of railway supplies at the conventions of locomotive engineers and master-carbuilders, and after the meeting we should have followed up every indication of interest in our goods manifested there. It is only in this way that it is worth while to make exhibits at the conventions."

Said another manufacturer: "We make exhibits at a good many kinds of conventions, charging the expense to our advertising account. I am convinced that the business which does not advertise is at a disadvantage, even if it is not always possible to say just what good has resulted from any particular advertisement." Taking down a bicycle journal, he continued: "Here is an account of a new 'record' made on our tires, which is quite an advertisement for us, but of course we had to contribute to the cost of the 'meet.' It is the same with the whole list of bicycle 'records.' Look at the speed attained on any of these 'fast' tires that you may select; the same riders could have done equally well on other tires in the market, but it was made to their interest to ride the tires which now have the credit for being so fast. It is all a matter of spending money to make a tire known. And just as it pays to spend money to keep bicycle-tires to the front wherever bicyclists meet, it may be a good expenditure to force other mechanical goods upon the attention of leading users of these goods whenever they come together in conventions."

* * *

IN these days of small profits in so many lines of rubber goods, the "special order" is decidedly welcome at the factories. There are some people who find satisfaction in wearing or using nothing but what has been made especially for them, no matter what may be kept in stock in the stores. There are others who now and then really need something different from the standard products of the factories, and who furnish the necessary specifications with their orders. It is hardly necessary to say that better prices are obtained for such orders—the element of competition generally being absent, together with the items of selling expenses, advertising, etc., which must be taken into consideration in estimating the profits on regular lines of goods. It may be that a quantity of rubber sheeting of special thickness or other dimensions may be wanted, or a lot of waterproof coats for a special purpose, and so on, through the whole range of mechanical goods, druggists' sundries, and whatever else can be made of rubber. In the New York office of one company I was told that an average of from fifteen to twenty "special orders" were booked daily and forwarded to their factory—the bills in some cases reaching handsome figures—and that if enough such orders could be obtained to keep their plant fully employed, there would no longer be any reason to complain on the score of profits.

* * *

THERE are reports of a growing demand for rubber boots, and especially from quarters where an increased sale of these goods was not expected by the leaders in the trade. Just what is the cause of this increase is not wholly clear, but there are indications that the farmers of the middle states and those of the central west are becoming better acquainted with the advantages of rubber boots for winter use. It is the opinion of a leading jobber that motormen on the electric railways—and their number has come to be legion—are becoming good customers for rubber boots for cold and wet weather. By the way, it is surprising that some rubber-man has not induced Colonel Waring, the street-cleaning commissioner of New York city, to adopt rubber boots as a feature of the uniforms of his street-sweepers, since he has enforced his own ideas about every item of their working apparel except their footwear.

THE MAN ABOUT TOWN.

---

THE New Jersey Car Spring & Rubber Co. of Jersey City are making it a point to import their own crude rubber.

## TRADE AND PERSONAL NOTES.

THE Boston Woven Hose and Rubber Co. have opened a branch house in New York, at No. 63 Reade street, where a full stock of their "Vim" (hose-pipe) and "Neverslip" (inner-tube) tires will be kept, together with cement, plugs, and tire-pumps. There will also be facilities for the prompt repairing of tires. The new store occupies floor space 25×70 feet. The manager is H. F. Hering, who has been identified with the company, in the Boston office and otherwise, for several years past.

=The Commonwealth Rubber Co. (New York) have become a corporation under the laws of the state. The directors are Samuel F. Randolph, Huldah P. Randolph, and Ida L. Dignan, and the capital mentioned is $25,000.

=The Goodyear Vulcanite Co. (Morrisville, Pa.) are putting in an electric-lighting plant at their factory. They are reported to be rushed with orders.

=The Akron Rubber Co. (Akron, Ohio) have filed an amendment to their charter, to provide for an increase of their powers, with a view to making reclaimed rubber.

=The German-American Gutta-Percha Fuse Co. (Chicago), mentioned recently in THE INDIA RUBBER WORLD, have purchased twenty acres of ground in the northwestern part of the city, at a cost of $40,000, upon which to erect their plant. The company will manufacture fuses for mining purposes, on lines similar to those of a German company who made an exhibit at the World's Fair, obtaining the first prize in their class.

=The Peoria Rubber and Manufacturing Co. (Peoria, Ill.) are said to be planning the manufacture of 15,000 bicycles and 200,000 rubber tires for their first season, and, eventually, to engage in the manufacture of rubber goods generally. Their new building has three stories, 66×270 feet, with a one-story addition 52×104 feet.

=The Ideal Rubber Co. (Brooklyn, N. Y.) have begun the manufacture of bicycle-tires, under contracts with three bicycle firms who will require all the tires which can be turned out for several months to come.

=The Diamond Rubber Co. (Akron, Ohio), although organized less than two years ago, at which time they employed only seven men, now have a working force of 350, and are reported to be turning out 20,000 tires daily. The original workers, by the way, were seven brothers, who had been employed originally by the Goodrich Rubber Co.—Walter, Frank, Joseph, Jay, George, William, and Mathew Sherbondy. During the last week in October the company shipped a full carload of "Diamond" tires to a Chicago firm and two such loads to New England. They have a contract to supply a Chicago firm with two carloads of tires per month during November, December, January, and February.

=The Henry C. Werner Co. have been incorporated under the laws of Ohio, to manufacture and sell boots and shoes of leather and rubber, with $100,000 capital. The incorporators are Henry C. Werner, Frank E. Huggins, John W. Riley, Eli A. Palmer, and Columbus O. Trimble.

=Philip H. Coyle, who has been superintendent of the National India Rubber Co.'s factories at Bristol, R. I., since the death of the late Hon. Isaac F. Williams, some two years ago, recently tendered his resignation, and has been succeeded by Edward Schlosser, who until lately was superintendent of the factory of the New Jersey Rubber Co., at New Brunswick. Mr. Coyle has been identified with the rubber industry for nearly thirty years, having entered the factory at an early age, and his record as a superintendent has been most creditable. The largest product of the Bristol mill up to the time that Mr. Coyle took charge was about 13,000 pairs of shoes per day, but during the past summer nearly 24,000 pairs were made daily, while the production in other departments increased in the same proportion. Mr. Coyle is a native of Bristol and has been identified with its affairs to an important extent, filling at one time the office of president of the town council. It is intimated that he is to be identified with a new rubber-manufacturing enterprise.

=Treasurer Charles R. Flint, of the United States Rubber Co., is reported as saying that the sales for the current year have been 15 per cent. larger than for the same period last year. He estimates that the increased efficiency from consolidating the two plants at New Brunswick, N. J., represents a saving of $75,000 a year.

=Articles of incorporation of the United Rubber Co. have been filed at Trenton, N. J., the purpose of the company being the manufacture, selling, and purchasing of rubber goods, and the buying and selling of crude rubber, rubber machinery, and merchandise generally. The capital stock is to be $250,000, but business will be begun with $50,000 paid in. The above company name has been used heretofore by Linburg, Sickel & Co. (Trenton), the members of which are interested in the new corporation. The names of the incorporators and the number of shares held by them are as follows: Watson H. Linburg (180), Welling G. Sickel (180), Alexander C. Oliphant, late of Brook, Oliphant & Co. (90), and John C. Broughton, manager for Linburg, Sickel & Co. (50).

=The L. Candee & Co. (New Haven, Conn.) have been making improvements in their plant, involving the installation of the second largest boiler in New England. It is an upright boiler of 800 horse-power, 36 feet high and 15 feet in diameter, and has 720 tubes. To afford the necessary draft for this immense boiler, a steel smokestack, 100 feet high and weighing 7½ tons, has been mounted on the factory. The company are reported busy on small orders.

=The Supreme Court at Providence, R. I., have dissolved the injunction granted on the petition of the National India Rubber Co. *v.* The Rhode Island Hospital Trust Co., restraining a foreclosure sale under certain mortgage bonds of the former held by the latter company. The bonds were issued by the old National company on the occasion of its becoming embarrassed, and came into the possession of Louis Schaeffer, in the office of W. R. Grace & Co. (New York), who sent them to the Rhode Island Hospital Trust Co. for collection. Payment was resisted by the rubber company on the ground that but $15,000 of the $42,000 worth of bonds involved are legitimately held against them, on account of a balance claimed to be due from W. R. Grace & Co. and now in litigation. Under the recent decision, however, the bonds will have to be paid.

=The United States Rubber Co. have leased the premises, Nos. 244–246 Monroe street, Chicago, with a view to bringing their headquarters in that city nearer to the heart of the shoe district. They will take possession next month.

=Mr. T. W. Stemmler, of T. W. Stemmler & Co., No. 36 East Fourteenth street, New York, was a passenger on the *New York*, which arrived from Southampton as this journal was going to press, doubtless with news and views of interest with regard to styles in mackintoshes. He left New York for Europe on September 4.

=The American Rubber Co. report the largest business in their history this season. Their factory at Cambridgeport, Mass., has been running full for months, with orders still far ahead.

=The Hartford Rubber Works Co., have recently erected a new storage-room, the contract for which was awarded to The Berlin Iron Bridge Co. (East Berlin, Conn.)

=The Peerless Rubber Manufacturing Co., who have made such an enviable reputation with their Rainbow Packing and other high grade specialties, have opened an office at 970 Old Colony Building, Chicago, which is in charge of their general sales agent, Mr. H. W. d'Evers. In connection with it they have ware rooms where they keep a full line of mechanical goods in stock.

=Mr. George W. Puchta of the firm of Puchta & Pond, Cincinnati, Ohio, agents for the Boston Belting Co., is the subject of a very flattering sketch in the *Northwestern Lumberman*.

=The Riverside Rubber Co. (Belleville, N. J.) are booming druggists' sundries, and running overtime to fill orders.

=W. D. Allen & Co., Chicago, are now manufacturing in large quantities the automatic couplings formerly controlled by E. B. Preston & Co., whose business they purchased. With increased facilities in this line of manufacture they are making a most vigorous push to supply the world with that type of coupling.

=Sinclair & Co. (New York) are now located at 88 West Broadway, next door to their former store, from which they removed because of the widening of College place.

=The Mechanical Rubber Co.'s League tire was a most popular favorite this year.

=The New Jersey Car Spring & Rubber Co. (Jersey City N. J.) have so many mail orders that they are working like Trojans, and in spite of the recent large addition to the factory plant.

=The sale of Ralnbow Packing for the month of September was 56 tons, a wonderful showing.

=C. L. Weaver & Co., wholesale dealers in rubber footwear exclusively at Detroit, Mich., occupy a store with five floors and basement, 40×100 feet, at Nos. 161-163 Jefferson avenue. They make a specialty of Woonsocket goods and have a large trade in Michigan, Ohio, and Indiana. Clarence L. Weaver is a native of New York state who went west in September, 1894, to establish this business, and his partner, Edward R. Rice, is a well-known rubber-shoe jobber of Buffalo, N. Y.

=Two prominent Bostonians have just ordered sets of rubber tires from the Rubber Tire Wheel Co. (Springfield, Ohio) —Chester J. Pike, selling agent of the United States Rubber Co., and Chief Webber, of the Boston fire-department.

=The Manhattan Rubber Mfg. Co. (New York) recently took an order for one of the Robins' Patent Conveying Belts, 26 inches wide and 986 feet long.

=Mr. R. D. Lane, formerly with the Garlock Packing Co., has accepted the New York management of the Knowlton Packing Co. and has an office at 64 Cortlandt street, New York. Mr. Lane is well known to the steamship, railroad and supply trade in and about New York and reports that he has already received many very gratifying orders.

=After a shutdown of two weeks work was resumed on October 24 in the factory of the United States Rubber Co. [formerly the Jersey Rubber Co.], in Little Burnet street, New Brunswick, N. J. During the time the factory was closed the machinery in the plant of the New Brunswick Rubber Co. in Washington street, which has been consolidated with the United States, was moved to the United States company's building. Both concerns will manufacture independently of each other, though in the same building.

=The editor of THE INDIA RUBBER WORLD recently visited Naugatuck, Conn., with Chester J. Pike, of the United States Rubber Co., and Mark W. Converse, of Converse & Pike. The primary object was to look over the rubber shoe factories in the town. After a call upon F. F. Schaffer, of the I. R. Glove Co. and a look at their plant, a tour over the Wales-Goodyear factories, piloted by Supt. A. D. Warner, and a visit to the great reclaiming plant of the last named company the party enjoyed the hospitality of Mr. Warner, which included lunch, a bicycle ride, followed by a horseback ride and dinner, making an exceeding pleasant day well spent.

=Mr. F. Cazenove Jones and E. M. Henderson of the Manhattan Rubber Mfg. Co., were visitors to the Atlanta fair where their company had an extensive exhibit of mechanical rubber goods.

=All of the machinery of the Goodyear Mechanical Rubber Co., comprising washers, mixing mills, calenders, vulcanizers, presses, emery wheel machinery, etc., has been purchased by the Manhattan Rubber Mfg. Co., and is now being set up at their works at Passaic, N. J.

=Johnson, Moody & Co., of Boston, will offer at auction on Tuesday, November 19, about 25,000 cases of rubber boots and shoes, on account of the United States Rubber Co. These goods are from the following factories: American, L. Candee, Colchester, National, New Brunswick, Wales-Goodyear, and Woonsocket, and are either "seconds" (or imperfect goods), or perfect but out of style, except those from the Colchester and National factories.

=The buildings of the Morgan & Wright bicycle-tire works (Chicago) include the original two-story factory, 100 × 150 feet, a new three-story office-building, 50 × 50 feet; a new four-story factory, 50 × 125 feet; and a six-story building recently equipped, 72 × 125 feet. Adjoining the latter the foundations are being laid for another six-story building, 100 × 125 feet. Eighty presses are now run for molding outer tubes, but when the new six-story building is completed, it is expected to increase the number to 200. There is also a one-story building, 50 × 100 feet, for the manufacture of tire-cement alone. The works run on both day and night turns, and their output this winter is expected to average 8000 to 9000 completed tires in each twenty-four hours.

=James Chambers, limited corporation, wholesale shoe-dealer at No. 196 Church street, New York, went into the hands of a receiver on October 25, with liabilities estimated at $510,927, and assets at $428,824. James McK. Graeff is president of the concern and owner of 990 of the 1000 shares of capital stock. The United States Rubber Co. were creditors to the extent of $58,552.

=Mr. B. T. Morrison (Boston), Treasurer of the Reading Rubber Manufacturing Co., is back from the wilds of Maine where he was moose hunting.

=William T. Jenney, of the Enterprise Rubber Co., Boston, is a member of the Democratic State committee and also of the executive committee of the Young Men's Democratic Committee of Massachusetts.

=The Cable Rubber Co. distributed at the Carriage Makers Convention recently, a souvenir in the shape of an octagonal pencil on one side of which were marked off inches and fractions of an inch thereby making it also a very neat pocket rule.

=Mr. Geo. A. Lewis, president of the Wales-Goodyear Rubber Co., will start shortly on a year and a half trip which will eventually take him throughout Europe.

=The Independent Rubber Shoe Co. (Providence) owned by ex-Governor Bourn, is doing a good business and all hands are working over-hours to keep up with orders.

=Mr. Thomas H. Dickinson, of the New York Belting & Packing Co., Ltd., was in a very cheerful frame of mind when met by THE INDIA RUBBER WORLD man recently and said that business was exceedingly good.

=The science of accounts is perhaps better illustrated in the auditing department of the United States Rubber Co. than anywhere else in the city of New York. A visit to that place with Captain Harry Bragg, the auditor, is a perfect revelation to one who wonders how the thousands of bills are sent out and the tens of thousands of accounts kept without the annoyance of errors.

=The rumor current that a rubber goods concern had leased the Todd box shop at Milford, Ct., for the manufacture of rubber goods, while based on fact, turns out to have an ending simply in talk.

=The Home Rubber Co. (Trenton) are erecting as an addition to their factory a brick building 175 feet long and 80 feet wide, the lower floor of which will be used as a hose room.

=The Conant Rubber Co. (Boston) have opened handsome offices and ware rooms at 170 Purchase street. They have also completed elegant factory buildings in South Framingham which will be described and illustrated in a later issue.

=The Worcester Rubber Co. owned by Albert H. Bloss and Geo. W. Rosseau are doing an excellent business particularly in mechanical lines at present.

=A very pretty announcement of the opening of their new store comes from the New Bedford Rubber Co., 67 William street, New Bedford, Mass. The stock consists of a full line of rubber goods comprising mackintoshes, druggists' sundries' mechanical goods, foot wear, etc. The announcement is signed by Thomas B. Himes, proprietor, Raymond Himes, manager, and John A. Beckerman, salesman.

=The Goodyear Metallic Rubber Shoe Co. are so pressed by orders that they have recently started up the old plant, which is known as factory No. 1.

=Mr. F. W. Heustis, formerly with the Newton Rubber Works, who has been laid up for a number of months from the effects of a fall, is out again and apparently fully recovered.

=Mr. H. A. Middleton has accepted a position as superintendent of the Spaulding & Kepper Co., Chicopee Falls, Mass.

=Referring to United States Rubber stocks, the Boston *Advertiser's* financial writer says: "Large local interests continue to buy the preferred for investment purposes."

=The "Joseph Banigan Chair of Political Science" in the Catholic University of America, endowed by the president of the United States Rubber Co., is to be filled by Carroll D Wright, now United states commissioner of labor statistics, and formerly the Massachusetts state commissioner of statistics. Mr. Wright will resign from public life to accept his new duties.

=Mr. George S. Mills, a popular salesman with C. J. Bailey & Co., Boston, Mass., was married on September 17 to Miss Amy Harris of Boston. The happy couple took as a wedding trip, New York, the Hudson, and Saratoga. They were the recipients of many valuable presents from the firm and its employés.

=Mr. Henry F. Knowles, of the Globe Rubber Works (Boston), took for a vacation trip a journey to Gettysburg and the caverns of Luray, a part of country he is well acquainted with, and one well calculated to give him the recuperation that he needed.

=Mr. George F. Davenport, city salesman for the Boston Belting Co., was married on September 23 to Miss Erminie W. Kelly, of Roxbury, Mass. New York and the Hudson river are said to have been included in the route on the wedding journey.

=The Davol Rubber Co., Providence, R. I., have so many wheelmen among their employés that they have fitted up a bicycle shed in the yard where are stored a score or more of wheels.

=Mr. C. J. Bailey (Boston), of rubber-brush fame, is erecting a very handsome house in Newton, Mass.

=Mr. Henry A. Gould, of the Gould Commercial Co. (New York), is treasurer and active superintendent of the New York Rescue Band which is said to be doing a remarkably effective rescue work on East Fourteenth street, New York, where it has club-rooms, employment bureau, etc.

=The McCord Rubber Co., of Chicago and St. Joseph, Mo., who handle the business of the late firm of E. B. Preston & Co., are agents in their territory for Meyer, Candee, Jersey, Imperial (National company's thirds), and Marvel rubber shoes, besides keeping in stock mackintoshes and other rubber and oiled clothing. Their Chicago manager is John L. Peterman, Nos. 122-124 Market street.

=The Duluth Rubber Co. is the style under which a new store has been opened in Duluth, Minn., as a branch of the business of Edward R. Rice, the extensive jobber of rubbers at Buffalo, N. Y.

=An auction sale is announced for Thursday, November 21, for account of the Boston Rubber Shoe Co., of about 20,000 cases of rubber boots and shoes—5000 cases of "seconds" (or imperfect goods), and the balance sold as "seconds," not on account of blisters, but because of a slight imperfection which the manufacturers think will not make them less durable. The sale will be held at No. 59 Bedford street, Boston, by Johnson, Moody & Co., auctioneers.

=W. D. Allen & Co. (Chicago) have just increased their capital from $45,000 to $60,000. They are making a great push for business in the line of fire department supplies and packings and are said to be eminently successful.

=That railroad companies as well as the rubber manufacturers are not slow to avail themselves of all improvements, is shown by the report of the sales of several large air compressors, by the Clayton Air Compressor Works, Havemeyer building, New York, to be used for supplying air in a wide variety of shop purposes.

=The Day Rubber Co., 415 North 4th street, St. Louis, Mo., now represent the Eureka Fire Hose Co., of New York, and are their sole agents for their fire hose and other specialties sold from St. Louis.

=The Lamb Mfg. Co., Chicopee Falls, Mass., are making golf balls, and other specialties in Gutta-percha and rubber that are sold to the sporting goods trade.

=The Goodyear India Rubber Glove Co., Naugatuck, Conn., are just completing a magnificent storehouse of brick for finished goods. If the present call for their goods holds, however, they will have little use for it, as they cannot ship them fast enough to suit their customers.

=The Iverson Rubber Co. (Boston) have the Blue Blood Packing as a part of their exhibit at the Mechanics' Fair in Boston.

=The Boston Rubber Co. have a neat exhibit at the Mechanics' Fair, Boston, showing carriage cloth, mackintoshes, rubber shoes, and rubber tires as applied to the vehicles by the Hood patent process.

=Prescott Bros., Boston, show at the Mechanics' Fair a great variety of wringer rolls but none of the rubber goods that they handle so successfully.

=Mr. J. P. Rider, vice-president of the New York Rubber Co., was a recent visitor to the Atlanta Fair, and of which he spoke in terms of warmest praise.

=The Rio Coachapa Plantation Co. have been incorporated under the laws of Kansas, with offices at Lawrence, in the State, for the purchase of lands in Mexico and the cultivation of coffee and rubber. C. S. Gleed, of Topeka, is president and Frank L. Webster, of Lawrence, secretary. The capital is $100,000.

=H. A. Yatman, president and manager of the Essex Rubber Co., Newark, N. J., has built up an enviable trade in stationers sundries, and has a finely equipped factory.

=The Mansfield Elastic Web Co. (Mansfield, Ohio), are running full time, being well supplied with orders. They only ran about half time in the early part of the year, because they were stocked up with manufactured goods. There was no change in their wage schedule during the dull times of the past two years.

=Mr. W. H. Adams, the well-known fire-hose salesman, has accepted a position with Henry F. Knowles of the Globe Rubber Works, and will visit the New England trade.

## REVIEW OF THE INDIA-RUBBER MARKET.

THE continued higher prices for crude rubber serve to lend interest to considerations, on the part of manufacturers, as to the probable effect upon the industry. Apparently the sense of the trade is that we are not to have a return to the abnormally low prices for rubber which have prevailed during the greater part of the past three years. Many manufacturers regard 70 cents as a fair average price for crude rubber, and some are known to base all their price calculations upon fine Pará at 75 cents. Viewed from their standpoint even the present prices are not high enough to excite great concern. But these prices are expected to continue at leas tuntil after the beginning of the new year, when the heaviest month's receipts at Pará occur. Then, the manufacturers hope, there may be a break. Meanwhile the mills which are not fully supplied for a few months ahead are restricting their purchases to actual needs. The statistical showing of the visible supplies of crude rubber is of interest at this time, and comparisons are offered for the same period in three years. Not only are stocks short on both sides of the Atlantic, but it is asserted that certain grades of rubber are not obtainable in the market at any price. The short stocks, by the way, are not the result of limited production, but of activity at the rubber-mills.

Again the question of prices is uppermost among manufacturers of rubber goods, and particularly in the mechanical lines. Not only does the increased price of crude rubber seem to make it necessary—to be consistent with good business sense—to revise price-lists, but cotton duck has also advanced to a point which compels the serious attention of the rubber-man. On November 1 occurred the second advance in duck since last spring, prices ranging now about 30 per cent. higher than were quoted six months ago.

The statistical position of Pará rubber in New York and elsewhere is as follows, the figures expressing tons of 1000 kilograms:

| | Fine and Medium. | Coarse. | Totals. | | Totals 1894. | Totals 1893. |
|---|---|---|---|---|---|---|
| Stock, September 30 | 162 | 28 | 190 | = | 964 | 700 |
| Arrivals, October | 741 | 248 | 989 | = | 807 | 727 |
| Aggregating | 903 | 276 | 1179 | = | 1771 | 1427 |
| Deliveries, October | 726 | 242 | 968 | = | 907 | 818 |
| Stock, October 31 | 177 | 34 | 211 | = | 864 | 609 |

| | 1895. | 1894. | 1893. |
|---|---|---|---|
| Stock in England, October 31 | 342 | 745 | 676 |
| Deliveries in England, October | 900 | 775 | 587 |
| Pará receipts, October | 2100 | 1850 | 1860 |
| Stock in Pará, October 31 | 725 | 555 | 960 |
| World's supply October 31 (excluding Caucho) | 2251 | 3001 | 2905 |
| Pará receipts since July 1 | 5380 | 5020 | 5410 |

In regard to the financial situation, Messrs. Simpson & Beers, brokers in crude India-rubber and commercial paper (No. 58 William street, New York), advise us as follows:

"During October, our city banks were generally out of the market for all kinds of mercantile paper, and where anything was done it was at less than full rates. While there has not been very much rubber paper offered, even the best this month has been difficult to place at 6 per cent. After about November 10, we look for a return flow of money from the west and south, which, together with the November disbursements, will, we think, make an easier money market, and will cause a decline of rates of at least 1 per cent. We quote first-class receivables at 5½ @ 6 per cent; single-name paper, 6 @ 6½, from four to six months' maturity. Out-of-town banks have been only occasional buyers."

The latest quotations in the New York market are:

| | | | | | |
|---|---|---|---|---|---|
| Pará, fine, new t a | 78 | @80 | Benguela | 53 | @54 |
| Pará, fine, old | 84 | @86 | Congo Ball | 36 | @40 |
| Pará, coarse, new t a | 49½ | @61 | Cameroon Ball | 39 | @40 |
| Caucho (Peruvian) strip | 47 | @48 | Flake, Ord and Lump | 25 | @26 |
| Caucho (Peruvian) ball | 54 | @55 | Accra Flake | 15 | @18 |
| Mangabeira, sheet | 40 | @43 | Liberian Flake | 29 | @30 |
| Esmeralda, sausage | 54 | @55 | Primest Pinky Madr | 59 | @61 |
| Guayaquil, strip | 36 | @45 | Madagascar, black | 44 | @46 |
| Nicaragua, scrap | 54 | @55 | Borneo | 26 | @ |
| Nicaragua, sheet | 52 | @53 | Gutta-percha, fine grade | | 1.30 |
| Thimbles | 35 | @35½ | Gutta-percha, medium | | 1.00 |
| Tongues | 37 | @40 | Gutta-percha, hard white | | 85 |
| Sierra Leone | 25 | @42 | | | |

In England experience has shown that when the general business prospect is brightening the rubber industry is sure to reap some of the benefits. It is not singular, therefore, that the holders of crude rubber, discounting the future, have stood out for steadily higher prices. But Pará grades have been in fairly good demand, and the market is very firm. The principal sales in England in October were:

255 tons Fine Pará, 3/2¾@3/5¾.
30 " Medium Pará, 3/1¾@3/3¾.
36 " Prime Buttons, 1/11@1/11½.
22 " Moma 1/3¾@1/5½.
72 " Thimbles, 1/4½@1/5.
170 " Benguela Niggers, 1/11@2/1¾.
10 " Liberian, 1/1½.
10 " Lagos Biscuits, 1/9½@1/10.
140 " Lagos Strip, 1/10¼
10 " Sierra Leone Cake, 1/4½.
5 " Sierra Leone Niggers, 2/2½.
15 " Mozambique Ball, 1/4½@1/11¾ (according to quality).
50 " Akassa Niggers, 1/3@1/4.

The following quotations are reported by mail from Liverpool, for medium sorts:

| | | | |
|---|---|---|---|
| Congo ball | 1/9½@1/10 | Cameroon Ball | 1/7 |
| Gaboon ball | 1/7 @1/7½ | Cameroon Clusters | 1/8½@1/9 |
| Small tongue | 1/3 | Batanga Ball | 1/7 |
| Bold tongue | 1/6½@1/7 | Old Calabar | 1/5@1/5½ |
| Flake | 1/0 | Sierra Leone Niggers | 1/3@2/2½ |
| Lump Flake | 1/0½ | Gambia Niggers, prime | 2/1@2/2 |
| Small ball | 1/4½@1/6½ | Gambia Niggers, low to fair | 1/0@1/9 |
| Thimbles | 1/4½@1/4¾ | Addah Niggers | 1/7@1/8 |
| Cape Coast and Saltpond | 1/1¾ | Benguela Niggers | 2/1 f.o.b. |
| Accra strips | 2/1½ | Loanda Niggers | 2/6½ |
| Accra biscuits, best quality | 1/11@1/11½ | Lagos | 1/5 |
| Accra Common Soft | 1/1½ | Mangabeira | 1/4@1/7 |
| Accra Paste | 8d@9d | | |
| Axim and Assinee | 1/5½@1/6 | | |

PRICES FOR OCTOBER (ISLAND RUBBER).

| | 1895. Fine. | 1895. Coarse. | 1894. Fine. | 1894. Coarse. | 1893. Fine. | 1893. Coarse. |
|---|---|---|---|---|---|---|
| First | 76 | 49 | 68 | 46 | 70 | 48 |
| Highest | 81 | 52 | 69½ | 47 | 70 | 49 |
| Lowest | 76 | 49 | 67½ | 45 | 66 | 46 |
| Last | 80 | 51 | 69½ | 47 | 66 | 46 |

## IMPORTS FROM PARA.

THE receipts of India-rubber direct from Pará and Manáos at the port of New York since our last publication are reported in detail below, the figures referring to pounds:

**October 7.**—By the steamer *Amazonense*, from Pará:

| | Fine. | Medium. | Coarse. | Caucho. | Total. |
|---|---|---|---|---|---|
| New York Commercial Co. | 93,200 | 15,700 | 48,300 | 3,700 | 160,900 |
| Reimers & Meyer | 186,700 | 44,600 | 73,400 | 4,100 | 308,800 |
| Lawrence Johnson & Co. | 5,000 | 1,400 | 8,400 | 40,200 | 55,000 |
| Otto G. Mayer & Co. | .... | 4,600 | 35,400 | .... | 40,000 |
| Sears & Co. | 5,000 | 4,600 | 13,800 | .... | 23,400 |
| Shipton Green | .... | .... | .... | 5,800 | 5,800 |
| P. Lima | 1,800 | 100 | 1,200 | .... | 3,100 |
| Totals | 291,700 | 71,000 | 180,500 | 53,800 | 597,000 |

**October 12.**—By the steamer *Mananense*, from Manáos and Pará:

| | | | | | |
|---|---|---|---|---|---|
| New York Commercial Co. | 88,800 | 11,400 | 43,200 | 2,600 | 146,000 |
| Reimers & Meyer | 33,600 | 26,400 | 48,800 | 400 | 109,200 |
| Otto G. Mayer & Co. | .... | .... | 18,000 | .... | 18,000 |
| Lawrence Johnson & Co. | .... | .... | 7,200 | .... | 7,200 |
| Shipton Green | 13,800 | 700 | 3,100 | .... | 17,600 |
| Sears & Co. | .... | .... | 5,400 | .... | 5,400 |
| G. Amsinck & Co. | 1,400 | .... | .... | .... | 1,400 |
| P. Lima | 2,200 | .... | 1,300 | .... | 3,500 |
| George G. Cowl | 2,900 | 300 | 1,000 | .... | 4,200 |
| Totals | 142,700 | 38,800 | 128,000 | 3,000 | 312,500 |

**October 26.**—By the steamer *Gregory*, from Pará:

| | | | | | |
|---|---|---|---|---|---|
| New York Commercial Co. | 130,700 | 19,600 | 45,500 | 1,000 | 196,800 |
| Reimers & Meyer | 53,600 | 30,300 | 59,600 | .... | 143,500 |
| Lawrence Johnson & Co. | 14,300 | 4,300 | 16,200 | .... | 34,800 |
| Sears & Co. | 2,500 | 400 | 8,400 | .... | 11,300 |
| Totals | 201,100 | 54,600 | 129,700 | 1,000 | 386,400 |

**October 26.**—By the steamer *Dona Maria*, from Manáos and Pará:

| | | | | | |
|---|---|---|---|---|---|
| Reimers & Meyer | 76,500 | 15,800 | 20,700 | .... | 113,000 |
| Boston Rubber Shoe Co. | 60,500 | 8,400 | 700 | .... | 69,600 |
| Joseph Banigan | 5,400 | 700 | 12,600 | .... | 18,700 |
| C. Ahrenfeldt & Son | 8,800 | .... | 1,600 | 12,200 | 22,600 |
| P. Lima | 2,600 | 300 | 1,000 | .... | 3,900 |
| Totals | 153,800 | 25,200 | 36,600 | 12,200 | 227,800 |

**November 2.**—By the steamer *Cametense*, from Pará and Manáos:

| | | | | | |
|---|---|---|---|---|---|
| New York Commercial Co. | 109,600 | 20,400 | 41,600 | 700 | 172,300 |
| Reimers & Meyer | 74,300 | 30,000 | 74,100 | 19,100 | 197,500 |
| Joseph Banigan | 51,800 | 9,600 | 10,400 | 7,400 | 79,200 |
| Lawrence Johnson & Co. | 34,300 | 11,400 | 19,000 | .... | 64,700 |
| Boston Rubber Shoe Co. | 14,900 | 1,100 | .... | 300 | 16,300 |
| Shipton Green | 10,000 | 700 | 3,100 | .... | 13,800 |
| Otto G. Mayer & Co. | .... | .... | 10,200 | .... | 10,200 |
| George G. Cowl. | 5,000 | .... | 1,000 | .... | 6,000 |
| P. Lima | 3,100 | .... | 1,700 | .... | 4,800 |
| Totals | 303,000 | 73,200 | 161,100 | 27,500 | 564,800 |

| | |
|---|---|
| October Imports from Pará | 1,523,700 |
| September Imports | 1,335,900 |
| August Imports | 766,500 |
| July Imports | 666,200 |
| June Imports | 1,030,100 |
| May Imports | 1,651,400 |
| April Imports | 2,156,400 |
| March Imports | 3,611,700 |
| February Imports | 2,274,400 |
| January Imports | 2,869,500 |

## PARA IMPORTS VIA EUROPE.

**October 2.**—By the steamer *Aurania*, from Liverpool:

| | |
|---|---|
| Reimers & Meyer (Fine) | 22,500 |
| Reimers & Meyer (Caucho) | 11,000 |

**October 10.**—By the steamer *Majestic*, from Liverpool:

| | |
|---|---|
| Reimers & Meyer (Fine) | 88,000 |
| Reimers & Meyer (Coarse) | 2,400 |

**October 12.**—By the steamer *Etruria*, from Liverpool:

| | |
|---|---|
| Otto G. Mayer & Co. (Fine) | 22,500 |
| Otto G. Mayer & Co. (Medium) | 11,500 |

**October 5.**—By the steamer *Marsala*, from Havre:

| | |
|---|---|
| Otto G. Mayer & Co. (Fine) | 22,400 |

**October 15.**—By the Steamer *Cevic*, from Liverpool:

| | |
|---|---|
| Reimers & Meyer (Fine) | 22,000 |
| Reimers & Meyer (Medium) | 8,500 |

**October 17.**—By the steamer *Germanic*, from Liverpool:

| | |
|---|---|
| George B. Morewood & Co. (Fine) | 11,500 |

**October 22.**—By the steamer *Tauric*, from Liverpool:

| | |
|---|---|
| George A. Alden & Co. (Fine) | 36,400 |
| George A. Alden & Co. (Medium) | 1,300 |
| Reimers & Meyer (Fine) | 65,000 |
| Reimers & Meyer (Coarse) | 15,000 |

**October 23.**—By the steamer *Teutonic*, from Liverpool:

| | |
|---|---|
| George A. Alden & Co. (Fine) | 68,500 |
| Otto G. Mayer & Co. (Fine) | 11,500 |

**October 28.**—By the steamer *Nomadic*, from Liverpool:

| | |
|---|---|
| George A. Alden & Co. (Fine) | 51,000 |
| George A. Alden & Co. (Medium) | 9,000 |
| Reimers & Meyer (Fine) | 88,000 |
| Earle Brothers (Fine) | 9,500 |
| Earle Brothers (Medium) | 3,000 |

## OTHER NEW YORK ARRIVALS.

BELOW will be found in detail the imports at New York during October, 1895, of India-rubber from Mexico, Central America, and South America, other than Pará grades; also, arrivals at New York of African and East Indian sorts:

### CENTRALS.

POUNDS.

OCT. 1.—By the *Colombia*=Colon:

| | |
|---|---|
| R. F. Cornwell | 2,000 |
| W. Loaiza & Co. | 2,000 |
| F. Probst & Co | 500 |
| Total | 4,500 |

OCT. 2.—By the *Alleghany*=Cartagena:

| | |
|---|---|
| D. A. DeLima & Co | 1,500 |
| For London | 1,500 |
| Kunhardt & Co | 800 |
| Total | 3,800 |

OCT. 3.—By the *Seguranca*=Mexico:

| | |
|---|---|
| H. W. Peabody & Co | 800 |

OCT. 3.—By the *Finance*=Colon:

| | |
|---|---|
| A. Santos & Co. | 8,000 |
| Jacob Baiz | 10,000 |
| Wallace Muller & Co | 7,200 |
| New York Commercial Co. | 4,300 |
| I. Brandon & Bros. | 2,500 |
| Piza, Nephews & Co. | 1,742 |
| A. N. Rotholz & Co | 155 |
| Total | 34,497 |

OCT. 7.—By the *Panama*=Vera Cruz:

| | |
|---|---|
| Graham, Hinckley & Co | 800 |

OCT. 8.—By the *City of Kingston*=Port Limon:

| | |
|---|---|
| Ellinger Brothers | 600 |

OCT. 9.—By the *Ailsa*=Greytown:

| | |
|---|---|
| A. P. Strout | 5,000 |
| Munoz & Espriella | 3,000 |
| G. Amsinck & Co. | 600 |
| G. R. Cottrell & Co | 400 |
| Total | 9,000 |

OCT. 10.—By the *City of Washington*=Tuxpan:

| | |
|---|---|
| H. Marquardt & Co. | 200 |

OCT. 12.—By the *Allianca*=Colon:

| | |
|---|---|
| A. Santos & Co. | 6,189 |
| G. Amsinck & Co. | 10,884 |
| W. R. Grace & Co. | 3,610 |
| Jacob Baiz | 3,500 |
| Roldan & Van Sickle | 2,804 |
| Dumarest & Co. | 1,630 |
| H. Feltman & Co. | 1,158 |
| G. R. Cottrell & Co. | 485 |
| I. Brandon & Bros. | 310 |
| Total | 30,580 |

OCT. 12.—By the *Newport*=Colon:

| | |
|---|---|
| A. P. Strout | 6,520 |
| Andreas & Co | 5,013 |
| Jacob Baiz | 3,044 |
| G. Amsinck & Co | 1,950 |
| W. Loaiza & Co. | 1,945 |
| R. F. Cornwell | 1,566 |
| Lanman & Kemp | 1,858 |
| Eggers & Heinlein | 377 |
| Munoz & Espriella | 272 |
| Hoadley & Co | 80 |
| Total | 22,625 |

OCT. 13.—By the *Leibnitz*=Bahia:

| | |
|---|---|
| Reimers & Meyer | 8,000 |

OCT. 15.—By the *Ciudad Condal*=Vera Cruz:

| | |
|---|---|
| Hughes & Co. | 1,000 |
| Graham, Hinckley & Co | 200 |
| Total | 1,200 |

OCT. 16.—By the *Yucatan*=Mexico:

| | |
|---|---|
| J. W. Wilson & Co | 500 |
| L. Monjo, Jr. & Co | 500 |
| Total | 1,000 |

OCT. 18.—By the *El Dorado*=New Orleans:

| | |
|---|---|
| Earle Brothers | 16,000 |
| W. H. Crossman & Bro. | 4,500 |
| F. H. Robinson | 3,000 |
| Total | 23,500 |

OCT. 19.—By the *Carib*=Truxillo:

| | |
|---|---|
| Eggers & Heinlein | 2,520 |
| Jose Agostini | 1,523 |
| K. Mandeil & Co | 5 6 |
| H. W. Peabody & Co | 494 |
| Total | 5,043 |

OCT. 21.—By the *Gulf of Akaba*=Trinidad:

| | |
|---|---|
| Thebaud Bros | 1,000 |

OCT 22.—By the *Knickerbocker*=New Orleans:

| | |
|---|---|
| F. H. Robinson | 2,200 |
| G J. Worth | 1,500 |
| W. H. Crossman & Bro | 1,300 |
| Total | 5,000 |

OCT. 22.—By the *City of Pará*=Colon:

| | |
|---|---|
| G. Amsinck & Co | 1,331 |
| Flint, Eddy & Co | 1,046 |
| Jacob Baiz | 900 |
| G. R. Cottrell & Co | 652 |
| Lanman & Kemp | 270 |
| Eggers & Heinlein | 230 |
| Total | 4,429 |

OCT. 22.—By the *Advance*=Colon:

| | |
|---|---|
| New York Commercial Co | 7,700 |
| Jacob Baiz | 6,800 |
| I. Brandon & Bros | 6,799 |
| Wallace Muller & Co | 2,400 |
| A. N. Rothoiz | 1,793 |
| Total | 25 192 |

OCT. 23.—By the *Orizaba*=Vera Cruz:

| | |
|---|---|
| H. W. Peabody & Co | 1,500 |
| The Seeger & Guernsey Co | 300 |
| Total | 1,800 |

OCT. 23.—By the *Hevelius*=Bahia:

| | |
|---|---|
| New York Commercial Co | 7,000 |
| Reimers & Meyer | 7,000 |
| Allerton D. Hitch | 1 000 |
| Total | 15,000 |

OCT. 26.—By the *El Sol*=New Orleans:

| | |
|---|---|
| F. H. Robinson | 1,500 |

OCT. 27.—By the *Edenmore*=Vera Cruz:

| | |
|---|---|
| Graham, Hinckley & Co | 400 |
| H. Marquardt & Co | 100 |
| Total | 500 |

OCT. 27.—By the *Regulus*=Cape Cracias:

| | |
|---|---|
| Eggers & Heinlein | 10 000 |
| Samper & Juinenez | 1,000 |
| K. Mandeil & Co | 200 |
| Total | 11,200 |

OCT. 28.—By the *Nomadic*=Liverpool:

| | |
|---|---|
| Reimers & Meyer | 6,500 |

OCT. 29.—By the *Alleghany*=Cartagena:

| | |
|---|---|
| D. A. de Lima & Co | 8,000 |
| Punderford & Co | 1,500 |
| Total | 9,500 |

OCT. 31.—By the *Finance*=Colon:

| | |
|---|---|
| New York Commercial Co | 23,000 |
| A. Santos & Co | 10,529 |
| G. Amsinck & Co | 6 000 |
| Frame Alston & Co | 2,800 |
| Dumarest & Co | 3,665 |
| W. R. Grace & Co | 3,181 |
| Piza Nephews & Co | 2.576 |
| H. Feitman & Co | 2,337 |
| Flint, Eddy Co | 2.300 |
| I. Brandon & Bros | 1,900 |
| Roidan & Van Sickle | 1,294 |
| A. M. Capen's Sons | 1,251 |
| D. A. De Lima & Co | 1,019 |
| Ellinger Bros | 400 |
| T. G. Tomas | 100 |
| G. R. Cottrell & Co | 643 |
| Total | 62,995 |

| | |
|---|---|
| Total Centrals for October | 290,161 |
| Total for September | 273,553 |
| Total for August | 259,101 |
| Total for July | 183,956 |
| Total for June | 194,270 |
| Total for May | 317,600 |
| Total for April | 168,072 |
| Total for March | 290,283 |
| Total for February | 239,251 |
| Total for January | 341,029 |

## AFRICANS.

| | POUNDS. |
|---|---|
| OCT. 1.—By the *Kensington*=Antwerp: | |
| Otto G Mayer & Co | 2,200 |
| OCT. 2.—By the *Aurania*=Liverpool: | |
| Reimers & Meyer | 3,300 |
| OCT 4.—By the *Prussia*=Hamburg: | |
| Reimers & Meyer | 9 000 |
| R. F. Downing & Co | 9,000 |
| A. T. Morse | 1,000 |
| Total | 20,000 |
| OCT. 4.—By the *Britannic*=Liverpool: | |
| George A. Alden & Co | 20,000 |
| OCT 3.—By the *Ocrenum*=Lisbon: | |
| George A. Alden & Co | 33.200 |
| Reimers & Meyer | 18,800 |
| Total | 52 000 |
| OCT. 4.—By the *Lucania*=Liverpool: | |
| W. A. Brown & Co | 7,000 |
| OCT. 7.—By the *Bovic*=Liverpool: | |
| Reimers & Meyer | 10,000 |
| Otto G. Mayer & Co | 8,200 |
| Total | 18,200 |
| OCT. 7.—By the *Manitoba*=London: | |
| George A. Alden & Co | 5,700 |
| Windmuller & Reolker | 3,900 |
| Total | 9 600 |
| OCT. 10.—By the *Majestic*=Liverpool: | |
| Reimers & Meyer | 2,600 |
| OCT 12 —By the *Phœnicia*=Hamburg: | |
| Reimers & Meyer | 17,800 |
| Albert T. Morse | 6.700 |
| George A. Alden & Co | 5.300 |
| Total | 29,800 |
| OCT. 15.—By the *Cevic*=Liverpool: | |
| George A. Alden & Co | 84,800 |
| Reimers & Meyer | 28,500 |
| Total | 113.300 |
| OCT. 16.—By the *Southwark*=Antwerp: | |
| Otto G. Mayer & Co | 51,000 |
| OCT. 17.—By the *Mississippi*=London: | |
| Geo. A. Alden & Co | 5.200 |
| OCT. 17.—By the *Amsterdam*=Rotterdam: | |
| Geo. A. Alden & Co | 10.000 |
| OCT. 18.—By the *Persia*=Hamburg: | |
| Reimers & Meyer | 19.700 |
| American Wringer Co | 3,300 |
| Total | 23.000 |
| OCT. 19.—By the *New York*=Southampton: | |
| Reimers & Meyer | 1.300 |
| OCT. 20.—By the *Maasdam*—Rotterdam: | |
| George A. Alden & Co | 2.000 |
| OCT. 22—By the *Tauric*=Liverpool: | |
| George A. Alden & Co | 51,600 |
| Reimers & Meyer | 75,000 |
| Otto G. Mayer & Co | 22,000 |
| Joseph Cantor | 6,500 |
| Total | 155,100 |
| OCT. 24—By the *Palatia*=Hamburg: | |
| Reimers & Meyer | 21,000 |
| George A. Alden & Co | 8,000 |
| To Order | 15,000 |
| Total | 44,000 |
| OCT. 26.—By the *Umbria*=Liverpool: | |
| Boston Rubber Shoe Co | 10,000 |
| OCT. 26 —By the *Moravia*=Havre: | |
| Otto G. Mayer & Co | 10,000 |
| OCT. 28.—By the *Nomadic*=Liverpool: | |
| George A. Alden & Co | 52.000 |
| Reimers & Meyer | 20 000 |
| Total | 72.000 |

OCT. 29.—By the *Noordland*=Antwerp:

| | |
|---|---|
| Otto G. Mayer & Co | 20,000 |

OCT. 30.—By the *Peninsular*=Lisbon:

| | |
|---|---|
| George A. Alden & Co | 78,500 |

| | |
|---|---|
| Total Africans for October | 760,400 |
| Total for September | 794,800 |
| Total for August | 524,400 |
| Total for July | 516,400 |
| Total for June | 322.600 |
| Total for May | 884.100 |
| Total for April | 367,200 |
| Total for March | 374,554 |
| Total for February | 441,500 |
| Total for January | 582,000 |

## EAST INDIAN.

| | POUNDS. |
|---|---|
| OCT. 7.—By the *Manitoba*=London: | |
| Reimers & Meyer | 5,000 |
| OCT 22.—By the *Ludgate Hill*=London: | |
| George A. Alden & Co | 224,600 |
| Reimers & Meyer | 137,000 |
| Windmuller & Reolker | 41,700 |
| Total | 403,200 |
| OCT. 31.—By the *Dania*=Hamburg: | |
| Otto G. Mayer & Co | 12,000 |

| | |
|---|---|
| Total East Indian for October | 420.300 |
| Total for September | 589 900 |
| Total for August | 253,100 |
| Total for July | 305,400 |
| Total for June | 241,100 |
| Total for May | 118,900 |
| Total for April | 451,000 |
| Total for March | 487,300 |
| Total for February | 1' 0,000 |
| Total for January | 28,800 |

## RECAPITULATION.

| | POUNDS. |
|---|---|
| Pará—direct imports | 1,523,700 |
| Pará—via Europe | 580,500 |
| Centrals | 290,161 |
| Africans | 760,400 |
| East Indian | 420,300 |
| Total at New York for October | 3,575,061 |
| Total for September | 3.277,800 |
| Total for August | 1,811,101 |
| Total for July | 1,686,956 |
| Total for June | 1,788,070 |
| Total for May | 2,971,400 |
| Total for April | 3,142 672 |
| Total for March | 4,856 383 |
| Total for February | 3,080,151 |
| Total for January | 4.038,229 |

## BOSTON ARRIVALS.

| | POUNDS. |
|---|---|
| OCT. 1.—By the *Philadelphia*=Liverpool: | |
| George A. Alden & Co.—East Indian | 4,000 |
| OCT. 5.—By the *Sachem*=Liverpool: | |
| Reimers & Meyer—African | 7,000 |
| OCT. 5.—By the *Scythia*=Liverpool: | |
| Reimers & Meyer—African | 17,000 |
| OCT. 18.—By the *Cambroman*=Liverpool: | |
| Reimers & Meyer—African | 16,000 |
| Reimers & Meyer—Fine Pará | 34,000 |
| OCT. 20.—By the *Borderer*=London: | |
| George A. Alden & Co.—East Indian | 99,000 |
| OCT. 23.—By the *Kansas*=Liverpool: | |
| Reimers & Meyer—Fine Pará | 45,000 |
| Reimers & Meyer—Africans | 10,400 |
| OCT. 29.—By the *Bothnia*=Liverpool: | |
| George A. Alden & Co.—Fine Pará | 22,500 |
| Total at Boston for October | 254.900 |
| Total for September | 214.500 |
| Total for August | 413,100 |
| Total for July | 180,260 |
| Total for June | 185.920 |
| Total for May | 129,620 |
| Total for April | 138,560 |
| Total for March | 106,900 |
| Total for February | 127,100 |
| Total for January | 243.950 |

## NEW ORLEANS.

OCTOBER.

| | POUNDS. | VALUE. |
|---|---|---|
| Nicaragua | 56,609 | $23,267 |